

INSIDE: OS X EL CAPITAN REVIEWED

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OS X El Capitan review: Mac upgrade that's as solid as a rock

Lots of new features in Apple's latest version of OS X. Upgrade and get an improved Mac. It's really that simple.

BY JASON SNELL

Arriving for everyone on September 30 was El Capitan, OS X 10.11, but I've been using it all summer. In these days of free operating-system updates, major OS X updates feel a lot more routine than they used to. Apple has chosen not to roll out major OS X features piecemeal throughout the year, though, so this will be the biggest change your Mac is to experience this year.

El Capitan, named after the large granite rock formation inside Yosemite National Park, is very much a refined version of OS X Yosemite, a recognizable progression from its predecessor. (In iPhone terms, it would be Yosemite S.) Apple says this update is all about a refined experience and improved performance. But it's traditional for Apple to take its no-big-deal updates and pour in a bunch of new features anyway, and El Capitan is no exception. This is a packed release, but one that makes sense as a follow-up to Yosemite.

JUST THE BASICS

Before we get started, it's worth recapping what this El Capitan business is all about. El Capitan is Apple's marketing name for OS X version 10.11, the latest update to your Mac's system software. If your Mac is running Yosemite (10.10), Mavericks (10.9), or Mountain Lion (10.8), it can run El Capitan. As of



September 30, you can download El Capitan straight from the Mac App Store. And if you're running an older version of OS X, you don't



need to do interim upgrades—you can go straight to El Capitan from Snow Leopard or later.

If the update is free and readily available, what's the big deal? Often people are trepidatious about upgrading their computers. If an app you rely on is incompatible with the new version, your entire workflow can be broken. It's worth being careful and checking with the makers of any apps you rely on before upgrading—most will post compatibility information on their websites.

In the case of El Capitan, a few of the apps and utilities I rely on weren't initially compatible, but most have already been updated as a result of Apple's summer-long testing period. Most major OS X upgrades feature a lot of under-the-hood security improvements, which is a good reason to stay up to date, but some of those changes can also break software. Several of the apps I use, including SuperDuper (go.macworld.com/superduper) and Default Folder X didn't work properly with El Capitan

(go.macworld.com/defaultfolderx-elcap), but SuperDuper has already been updated to regain compatibility and Default Folder X has a new version on the way (and a workaround in the meantime).

One of the security improvements in El Capitan is a feature called System Integrity Protection, which clamps down on the ability of malware to hijack your Mac by masquerading as a user with system-administration privileges. This is a good thing—but a few apps, including Default Folder X and SuperDuper, relied on that same vector to do their jobs. You can turn off System Integrity Protection if you absolutely need to, but it seems like most apps will be able to function just fine with it turned on. (It's just that some of them may need an update first.)

Bottom line: I've found El Capitan to be a stable update, but you should always back up your system and check with the makers of your most important apps about compatibility before installing it.

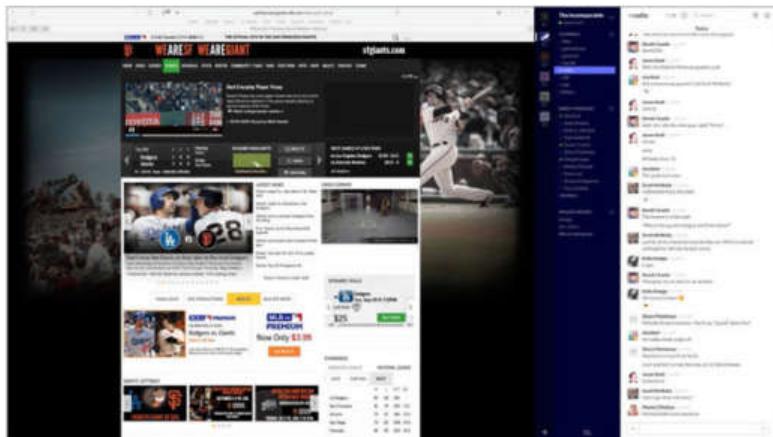
A SANER MISSION CONTROL

We all use our Macs in different ways—and even the same person can use a giant 5K iMac in a different way than they use an 11-inch MacBook Air. (I am one of those people.) My gut feeling is that there's a devoted (but small) subset of Mac users who love using Mission Control (formerly Exposé) to arrange their windows and workspaces, or frequently use Full Screen mode for apps. If you're one of those people—or if you've always been tempted to improve how you organize your workspace, I've got good news for you: El Capitan offers quite a few boosts to Mission Control and Full Screen Mode.

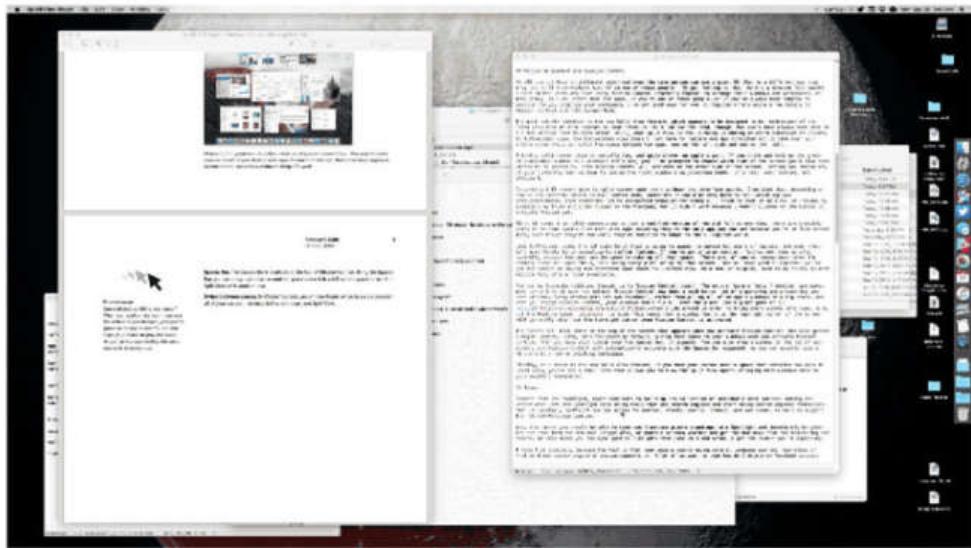
The most notable addition is the new Split View feature, which appears to be designed to be reminiscent of the Split View feature

that appears on some iPads in iOS 9. Unlike the iPad, though, Mac users have always been able to run two windows next to each other. Still, what Split View is really doing is adding an extra dimension of utility to full-screen view. Now full-screen view doesn't just have to feature one app stretched out to take over your entire screen—you can split the space between two apps, one on the left side and one on the right.

Entering Split View is actually fun, and quite clever on Apple's part. If you click and hold on the green + (maximize) button in a window's title bar, you'll be prompted to choose which side of the screen you'd like that window to be placed on. Then Mission Control will activate on the other side of the screen, letting you choose any of your currently open



SPLIT VIEW ALLOWS
the user to display
two apps side by
side.



windows to use as the first window's split-screen buddy. It's fast, cool looking, and efficient.

Converting full-screen mode to split-screen mode isn't without its interface quirks. I've noticed that, depending on how an app presents itself in full-screen mode, it's sometimes difficult to tell which app is active, i.e., frontmost. That sometimes leads to unexpected behavior—for example, I tried to zoom in on a PDF in Preview by spreading my thumb and index finger on the trackpad, but it didn't work because I hadn't clicked on the window to activate Preview yet.

Since it seems that Split View is just a modified version of the old

full-screen view, there are probably going to be some quirks like this—with apps assuming they're the only app you can see because you're in full-screen mode, even though they're not—until they're modified to adapt to the El Capitan world.

Like full-screen view, I'm not sure Split View is going to appeal to anyone but users of laptops, and even then, it's more likely to be appealing on smaller laptops. If you've got a large monitor, full-screen view is often overkill, because few apps are designed to take up all that space. (There are, of course, exceptions—when I'm editing audio in Logic Pro X, it's using every pixel of my 5K iMac screen.) But at least with El Capitan,

WHEN YOU ENGAGE
Mission Control, app windows are displayed in a way that mimics their actual placement on your desktop.

you've got the option of having two different apps share full-screen view. On a smaller display, such as my trusty 11-inch MacBook Air, it's a nicer experience.

Perhaps my favorite addition, though, is to Mission Control itself. The entire feature feels friendlier and makes more sense than it ever has before. Mission Control now does a much better job of organizing and presenting your open windows. Every window gets its own thumbnail, rather than piling all of an app's windows in a big stack. And when you engage Mission Control, your windows don't fly all over the place like a giant game of 52 Pickup—they slide around in order to bring every window into view, sure, but the feature keeps geography in mind. This means that a window that's in the top-right corner of the screen will generally stay near the top-right corner when Mission Control is activated.

The Spaces Bar—that strip at the top of the screen that appears when you activate Mission Control—has also gotten a major upgrade. First, it's collapsed by default, giving more space to your windows when you activate Mission Control. When you move your cursor over the Spaces Bar, it expands.

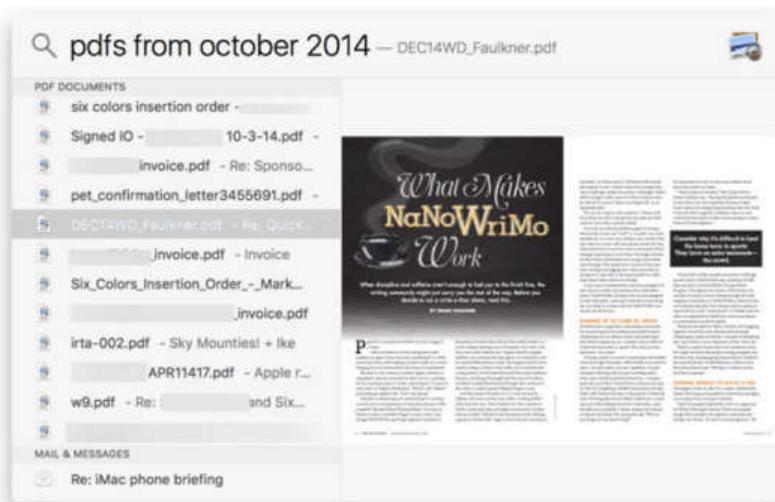
You can also drag a window to the top of your screen, and Mission Control will automatically activate with the Spaces Bar expanded, so you can quickly toss a window into a new or existing workspace.

THE SPACES BAR—THAT STRIP AT THE TOP OF THE SCREEN THAT APPEARS WHEN YOU ACTIVATE MISSION CONTROL—HAS ALSO GOTTEN A MAJOR UPGRADE.

Finally, in a boost to the new Split View feature, if you move your cursor over a space that contains two apps in Split View, you'll see a small icon that allows you to blow the Split View apart—bringing both windows back to your existing workspace. When you click it, you see the two windows slide back into their place in the Mission Control landscape.

SEARCH (IN SPOTLIGHT AND ELSEWHERE)

Between Siri and Spotlight, Apple continues to build up its collection of searchable data sources. On iOS, Siri and Spotlight seem to be merging and mingling in a bunch of interesting ways. On OS X, those data sources crop up in a bunch of different places: They're in Spotlight, yes, but you'll also find them in Safari. With El Capitan, Spotlight and Safari



both have access to weather, stocks, sports, transit, and web video, as well as support for natural-language queries.

Yes, this means you should be able to type **san diego chargers standings** into Spotlight and immediately be given the bad news from the AFC West, or **phoenix az weather** and get the bad news from the desert west. It also means you can type queries like **pdfs from june 2013** or **presentations from august 2012** into Spotlight or the Finder and actually get the result you're expecting.

I like this approach, because the fact is that many people search using natural-language queries regardless of whether their search engine of choice supports it. A lot of

us want to type, **how do I delete my Facebook account** into Google, rather than carefully crafting a string of search terms. So Spotlight gets smarter, we get to be lazier, and it should all work out.

That said, the quality of the results from these data sources needs to be tightened up. When I search for **arsenal standings**, I get an English Premier League table, but without point totals. A search for **cal football schedule** shows me a weird amalgamation of dates, many of them listed as December 31, and **pac-12 standings** displays an unsorted list of conference records. Likewise, if I type **mempolis weather**, I don't get the weather near Graceland, but the weather in Memphis, Texas, population 2290. Not smart enough, Spotlight.

SPOTLIGHT'S NATURAL-LANGUAGE SUPPORT means you can type queries like, **pdfs from october 2014** and Spotlight will show the proper results.

There's one improvement to Spotlight that I applaud wholeheartedly, and it has to do with the Spotlight window itself. Last year, Yosemite cut the cord between the Spotlight window and the Spotlight icon in the top-right corner of the Menu Bar. It floated in the middle of the screen, disconnected from the icon it was supposedly attached to. Now with El Capitan, you can move the Spotlight box anywhere you want, and resize the results window, with the menu bar icon serving as nothing more than a shortcut.

SAFARI PINS ITS FAVORITE SITES

With El Capitan comes a new version of Safari, version 9, and it's got some

clever new features. I have to admit that I still use bookmarks (and don't use RSS), and I really enjoy the new Pinned Sites feature in Safari 9. Pinned Sites are like mega-bookmarks—or if you prefer, they're a simpler, more visual version of the Favorites Bar. Drag a tab into the left corner of Safari's title bar and it will stay there permanently, with a little icon (or letter if the site in question hasn't built a special custom icon for use with Pinned Sites) to distinguish it.

Pinned Sites are kept refreshed, so with one click you can see what's new on your favorite site. Clicks that lead to other pages on the site are loaded in the pinned site's tab, but external links all open in separate tabs, keeping your pinned site right

The screenshot shows the OS X Spotlight search interface. At the top, a search bar contains the text "memphis weather". Below the search bar, the results are displayed under the heading "TOP HIT". The first result is "Weather in Memphis, TX", which is highlighted with a blue bar. To the left of this result is a small icon of a sun. To the right is the text "Memphis, TX" and "73°". Below this, a table shows the daily forecast:

	Now	12AM	1AM	2AM	3AM	4AM	5AM
Monday	73	72	70	68	66	64	64
Tuesday						88	62
Wednesday						88	63
Thursday						86	63
Friday						86	60
Saturday						84	60

Below the forecast table, there is a section titled "SUGGESTED WEBSITE" with a link to "blog.memphisweather.net — MWN...". There is also a "MAIL & MESSAGES" section with a message from "Re: new info + your input please: R...".

THINK “MEMPHIS,” and most people think Tennessee, except for Spotlight (and the citizens of Memphis, Texas).



PINNED SITES are represented by icons on the left side of the Tab bar.

where it is. As someone who likes to bookmark a few very-favorite sites and visit them regularly, this has the makings of a cool feature.

This feature does change Safari's keyboard shortcuts and tab behavior, however. Since Pinned Sites are always open, if you try to close a Safari window when viewing a Pinned Site, it will switch you to a new tab instead. If you have a single tab open that's not a Pinned Site, it will close the entire window. But if you open a new window and navigate back to the Pinned Site, you'll find that it's still on the page of the Pinned Site that you last visited.

If you're used to navigating the first item in the Bookmarks Bar by typing Command-1, you'll also have to get used to a change. *Command-number* shortcuts are now reserved for navigating Pinned Sites and browser tabs, moving from left to right. I used to have my personal weather station page as my first Bookmarks Bar item; now I've made it my first Pinned Site, so I can keep

the same shortcut. You can also access all the Bookmarks Bar items by adding in the Option key, in the format *Command-Option-number*.

Nobody likes blaring audio from pages that automatically play videos when the page loads, and if you're someone who likes to open articles in multiple tabs, you can very quickly have several different videos playing in different tabs. In Safari 9, you have much more control over where audio plays in your browser. With one click on the speaker icon in Safari's Smart Search bar, you can mute the audio in the current tab. Or click and hold on that icon, and you'll see a list of all tabs that are playing audio—with the option to mute the sound from the currently open tab or from all the non-visible tabs. You'll also see a list of all tabs that are playing audio in that list. Tabs playing audio are also indicated by a speaker icon in the tab itself. This is a really great feature that I look forward to using when I'm browsing ESPN, Macworld, and many of my other favorite sites, which I

generally visit only to read the articles.

Safari Reader, which gives you a simplified view of a complicated page layout, has added more display preferences. In the Yosemite version of Safari, you can make the text larger or smaller, but that's about it. In Safari 9, you can not only adjust text size, but also choose from four color themes and eight typefaces. It's a good look, especially when I'm reading at night and prefer a light-on-dark theme.

Finally, anyone who has been frustrated that they can't easily send a video they're watching in Safari and play it on their TV—something that's easily done on an iOS device—will be happy to know that Safari now supports AirPlay video. If you're playing a video that's compatible with AirPlay, you'll be able to see an AirPlay icon right on the video within Safari, and can select it to send that video to an AppleTV via AirPlay. Whew!

ADMIT YOU USE NOTES

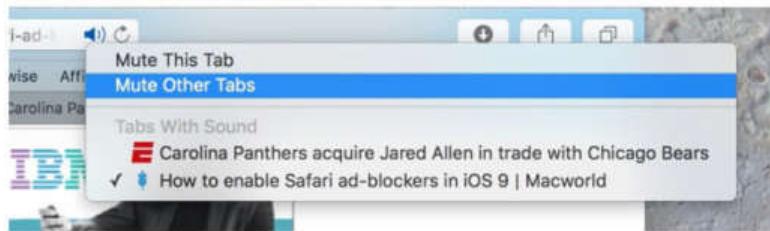
To paraphrase the late, great Yogi



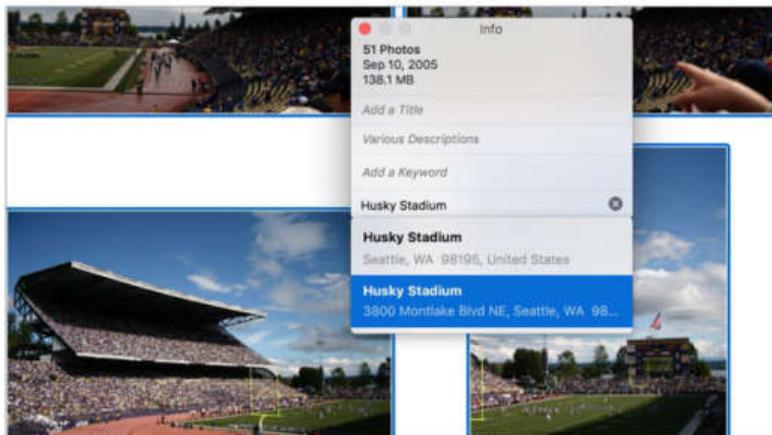
Berra, nobody likes the Notes app—it's too popular. The App Store is full of apps—iOS and Mac, alike—that outdo Notes at the job of taking notes, creating shopping lists, you name it. But Notes has one major thing going for it, namely that it's on every Mac and iOS device in existence. I admit it: I use Notes for all sorts of things.

Like taking selfies (or using the iPad as a camera), Notes is something people use, so Apple might as well put some effort into making the experience better! And so with iOS 9 and El Capitan, Notes has received a major upgrade. Now you can stick a whole bunch of different files—PDFs,

SAFARI 9 now supports AirPlay video.



SAFARI 9 USES a speaker icon to tell the user that audio is coming from a webpage.



PHOTOS 1.1 NOW HAS
batch support for
changing titles and
adding location
information.

images, even videos—into a note. You can sketch notes on iOS and view them on the Mac—but not create them yourself. Notes is also now an option in the Share button, so you can send data to Notes from any app that displays a share sheet.

To create a checklist in Notes, you just select some text and click the Checklist button in the toolbar. That's it—every line gets a little check box in front of it, and you can check them on and off at will. The checkboxes aren't connected to anything, and clicking them doesn't do anything except check and uncheck them. But if you're making a quick to-do list, maybe that's all they need to do.

Up to now, Notes was one of the rare Apple cloud-connected apps on OS X that didn't actually use the iCloud infrastructure. Instead, it connected to a special IMAP mailbox

in one of your connected email accounts. (If you've ever searched your Gmail and seen a dozen different notes files in your results, this is why.) But starting with El Capitan, Notes can also use iCloud proper. In fact, for most of the more advanced features—including checklists, fancy links, and access to the type style menu—you'll need to use iCloud. Fortunately, you can easily drag all your old notes from your email account right into iCloud, and they'll transfer over.

PHOTOS GETS EXTENDED

The first version of Photos for Mac was not without its power features, but while I was working on my book about Photos (takecontrolbooks.com/photos-crash-course), I heard from a whole lot of people who had opinions about the most important features it omitted. Fortunately, some of the

most common complaints I heard have been addressed with the new version of Photos that ships with El Capitan.

The biggest addition is editing of image data, individually and in batches. In Photos version 1.1, you can add location information to either a single photo or an entire batch, and batch-change titles and other information.

To do this, you open the Inspector window. A not-yet-geotagged image will offer a section of the window labeled Assign A Location. Clicking in this area will let you enter a street address or a name of a point of interest, and Photos will search Apple's Maps database. You can also just click on the pin and drag it around the map, placing it wherever you like. To batch-change titles, descriptions, or keywords, just select a bunch of images and input the new information into the Inspector window.

Another huge user complaint was about a lack of flexibility in sorting albums. (The first version of Photos let you sort them any way you wanted, as long as it was by date.) The new version of Photos will let you sort them by date and title, as well as keep them in a custom order that you determine by dragging images around.

Photos on El Capitan also supports

image-editing extensions written by third-party developers. If there's a particular editing effect or tool that isn't available in Photos, a developer can write an extension that provides that feature, and it can be accessed

WHILE YOU CAN EDIT PHOTOS USING EXTENSIONS RIGHT WITHIN PHOTOS, THEY AREN'T QUITE AS INTEGRATED INTO THE APP AS THE BUILT-IN TOOLS.

from within Photos. A bunch of different Extensions are on the way—I tested a couple of them, and many will be released alongside El Capitan.

While you can edit photos using Extensions right within Photos, they aren't quite as integrated into the app as the built-in tools. Basically, the edits that you make in an Extension are done on top of a version of your photo. If you've applied other effects, those effects are "burned in"—you can't apply a black-and-white effect, then add some distortion effects with an extension, and then remove the black-and-white effect. Fortunately, Photos always lets you revert to the original version of the photo if you need to start again.

Adding Extension support to Photos opens up a whole new set of capabilities, from the serious to the silly, all without ever needing to leave

Apple's next-generation photo editor. It's a good thing.

OTHER BUNDLED APPS

Of course, every OS X update brings upgrades to many other Apple-built apps. Mail and Maps both received nice updates this time around.

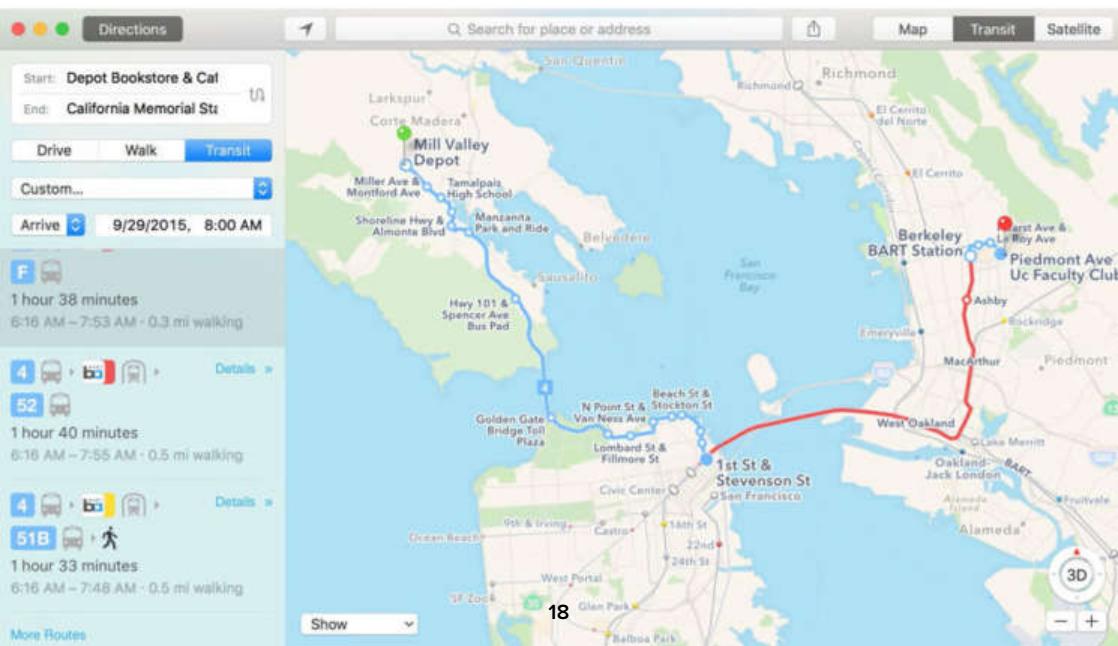
Taking a cue from iOS and from some third-party competitors, Mail now allows you to use the trackpad to swipe messages into the trash or to mark them as unread. Trackpad-oriented users will appreciate the shortcut, and there's a preference to let you choose whether a swipe deletes a message or archives it.

For quite some time now, OS X has

had the ability to detect certain kinds of content in your email messages—names of contacts, events, dates, and times. In El Capitan, Mail does a much better job of putting that information in context. If a potential event is mentioned in the text of an email message—"let's have lunch on Thursday"—Mail will add a banner above the top of the message body that displays the event and provides an "add event" link to quickly add it to your calendar. Likewise, if the person mailing you doesn't appear in your Contacts list, Mail will display a banner indicating that it's detected a possible new contact with a quick "add contact" link.

MAPS IN EL CAPITAN

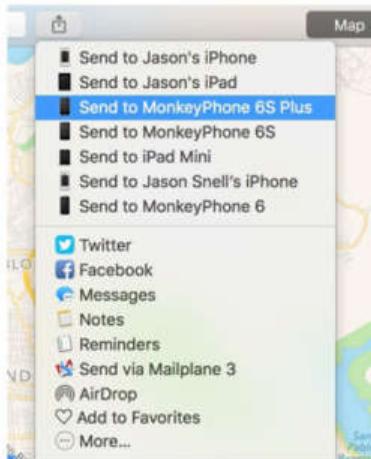
now offers transit maps in a few select regions, with more to come.



But perhaps the best feature in Mail is one that lives under the hood and addresses a long-standing problem with the app. Perhaps because it was developed at Apple's campus, replete with high-speed Internet connections, Mail has had a major blind spot: poor performance on slow connections. Have you tried using Mail on a slow, high-latency Internet connection on, say, an airplane? All you want to do is check your Inbox, and Mail's trying to sync all your IMAP mailboxes rather than getting to the good stuff.

In El Capitan, Mail prioritizes showing you new mail in your Inbox and prioritizes the downloading of the messages or mailboxes that you're currently viewing. It's an improvement that's been a long time coming—thanks, slow Virgin America in-flight Wi-Fi!—but it's finally here.

The banner feature in Maps is transit maps, which are available in eight North American cities, two European cities, and over 300 cities in China. I was able to try this using Bay Area data, which is a bit of a mess because we've got a whole bunch of different, unaffiliated transit agencies. I was able to plot a trip from my local bus stop to downtown Berkeley, complete with a transfer from the bus to BART in San Francisco, and know exactly when I'd need to leave my house in order to



ROUTES YOU CREATE in El Capitan Maps can be sent to Maps on your iOS device.

arrive at the proper time. It's pretty cool. Now Apple needs to get to work on bringing it to many more regions!

When I'm plotting a journey, I usually first explore the trip on my Mac, but of course when I'm making the actual journey I'm using my iPhone. In El Capitan, I can directly share my route with any other iOS device connected to my Apple ID, so I can send my trip directly to my iPhone (and Apple Watch) with a couple of clicks.

IMPROVING PERFORMANCE

Under the hood in El Capitan, Apple's made a bunch of changes that you might not notice—but that might bring you a big benefit. Apple's brought Metal, its graphics technology, over from iOS, and has dropped

it in as a replacement for the old OpenGL technology. Many of OS X's key graphics frameworks, including Core Animation and Core Graphics, now use Metal rather than OpenGL. The end result should be that all sorts of parts of the Mac interface should feel snappier.

Apple says that apps launch faster in El Capitan, that switching between apps is faster, and that opening and moving around in PDFs in Preview is faster. I booted back and forth between Yosemite and El Capitan partitions on my 5K iMac and couldn't really notice the difference, but perhaps it's more noticeable on slower systems.

Games, in particular, should benefit from the switch to Metal—assuming games are built to take advantage of it. Sharing a graphics technology with iOS should help a whole lot, since once developers do the work to use Metal on iOS, they can apply that work to the Mac as well. Adobe, too, has committed to using Metal in a future update to its Creative Suite, which should likewise improve performance on existing Mac hardware.

BOTTOM LINE

It's not the most exciting word, but I keep coming back to *routine* as a way of describing the upgrade to El Capitan. These days, OS X updates are free, are compatible with pretty

much every Mac that could run the previous version, bring with them all the most important security and stability fixes, and on top of all that, there are a bunch of new features and updates to apps that you use every day.

There was a time, only a few years ago, when OS X updates were fraught with should-I-or-shouldn't-I peril, along with a real price tag. Those days are long gone. Should you update to El Capitan? Unreservedly yes—I've found it to be stable, it's free, it'll download and install itself on your Mac with nearly no intervention, and it'll bring with it improved security, speed, and functionality.

The days of dramatic operating-system updates are over. El Capitan is as solid as the giant granite monolith that towers over Yosemite Valley. Upgrade, and get an improved Mac. It's really that simple. ■

OS X EL CAPITAN



AT A GLANCE

El Capitan is as solid as the giant granite monolith that towers over Yosemite Valley. Upgrade, and get an improved Mac. It's really that simple.

PROS

- Enhancements make Mission Control more useful
- Split View cleverly implemented
- Expanded Spotlight functionality
- Safari 9 pinned sites and tab muting
- Mail optimizations

CONS

- Maps transit information limited to a few regions
- Waiting for apps enhanced for Metal
- Spotlight data sources need to be tightened up
- Quirks when using Split View

PRICE

Free

COMPANY

Apple

IT'S IMPOSSIBLE
TO BEAT CANCER.
ALONE.



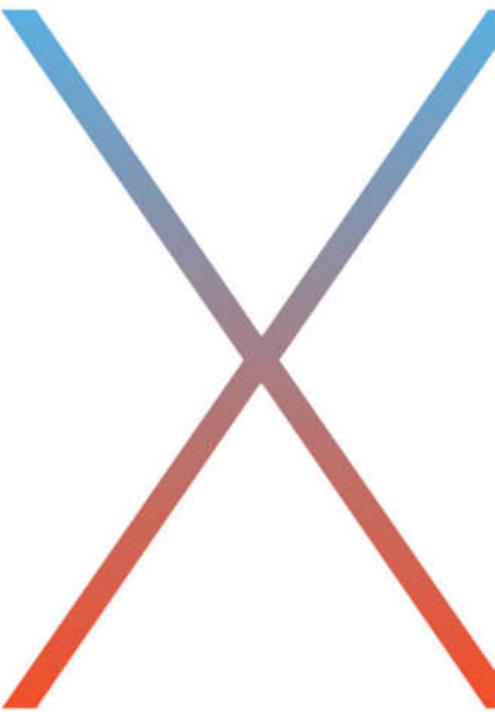
It takes all of us to beat cancer.
Doctors, researchers, volunteers,
and most importantly, people like
you. Join the movement to beat
cancer at StandUp2Cancer.org



How to make a bootable OS X 10.11 El Capitan installer drive

A bootable installer drive is much more convenient when you're upgrading a Mac.

BY DAN FRAKES



When OS X shipped on a DVD a good number of years ago, you always had the convenience of a bootable installer—an OS X installer that could be used to boot your Mac if its own drive was having problems. But to install or reinstall a recent version of OS X, you must either download a non-bootable installer from the Mac App Store or (via OS X's invisible, bootable recovery partition) download 6GB of installer data from Apple's servers during the installation process. In other words, you no longer have the same safety net or convenience.

Because of this, I recommend creating your own bootable El Capitan (OS X 10.11) installer drive on an external hard drive or USB thumb drive. If you need to install El Capitan on multiple Macs, using a bootable installer drive is faster and more convenient than downloading or copying the entire installer to each computer. If you want to erase the drive on a Mac before installing El Capitan, or start over at any time, you can use a dedicated installer drive to boot that Mac, erase its drive, and then install the OS (and subsequently restore whatever data you need from your backups). And if your Mac is experiencing problems, a bootable installer drive makes a handy emergency disk.

(OS X Recovery lets you repair your drive and reinstall OS X, but to perform the latter task, you must wait—each time you use it—for the entire 6GB of installer data to download. At best, that's a hassle; at worst, it's hours of

waiting before you can get started.)

As with previous versions of OS X, it's not difficult to create a bootable installer drive, but it's not obvious, either. I show you how, below.

KEEP THE INSTALLER SAFE

Like all recent versions of OS X, El Capitan is distributed through the Mac App Store: You download an installer app (called *Install OS X El Capitan.app*) to your Applications folder. In this respect, the OS X installer is just like any other app you buy from the Mac App Store. However, unlike any other app, if you run the OS X installer from that default location, the app deletes itself after it's done installing OS X.

If you plan to use the OS X installer on other Macs, or—in this case—to create a bootable installer drive, be sure to copy the installer to another drive, or at least move it out of the Applications folder, before you use it to

install the OS on your Mac. If you don't, you'll have to redownload the installer from the Mac App Store before you can use the instructions below.

WHAT YOU NEED

To create a bootable El Capitan installer drive, you need the El Capitan installer from the Mac App Store and a Mac-formatted drive that's big enough to hold the installer and all its data.

This can be a hard drive, a solid-state drive (SSD), a thumb drive, or a USB stick—an 8GB thumb drive is perfect. Your drive must be formatted as a Mac OS Extended (Journalized) volume with a GUID Partition Table. (Follow this tutorial to properly format the drive.)

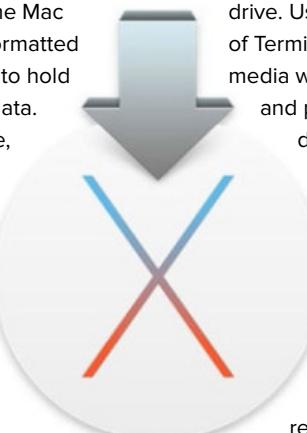
Your OS X user account must also have administrator privileges.

APPLE'S GIFT: CREATEINSTALLMEDIA

In my articles on creating a bootable installer drive for older versions of OS X, I provided three, or even four, different ways to perform the procedure, depending on which version of OS X you were running, your comfort level with Terminal, and other factors. That approach made sense in the past, but a number of the

reasons for it no longer apply, so this year I'm limiting the instructions to a single method: using OS X's own `createinstallmedia` tool.

Starting with Mavericks, the OS X installer hosts a hidden Unix program called `createinstallmedia` specifically for creating a bootable installer drive. Using it requires the use of Terminal, but `createinstallmedia` works well, it's official, and performing the procedure requires little more than copying and pasting.



The only real drawback to `createinstallmedia` is that it doesn't work under OS X 10.6 Snow Leopard—it requires OS X 10.7 Lion

or later. Though it's true that some Macs still running Snow Leopard can upgrade to El Capitan, I think it's safe to assume that most people installing OS X 10.11 will have access to a Mac running 10.7 or later.

(If you absolutely refuse to go near Terminal, an El Capitan-compatible version of DiskMaker X is now available, although I haven't yet had the chance to test it.)

MAKING THE INSTALLER DRIVE

1. Connect to your Mac a properly formatted 8GB (or larger) drive, and

A screenshot of a macOS Terminal window titled "Desktop - bash - 80x21". The window shows the command being run: "DanBookPro2015:Desktop frakes\$ sudo /Applications/Install\ OS\ X\ El\ Capitan.app/Contents/Resources/createinstallmedia --volume /Volumes/Untitled --applicationpath /Applications/Install\ OS\ X\ El\ Capitan.app --nointeraction". Below the command, the terminal displays the progress of the operation:

```
>Password:  
Erasing Disk: 0%... 10%... 20%... 30%...100%...  
Copying installer files to disk...  
Copy complete.  
Making disk bootable...  
Copying boot files...  
Copy complete.  
Done.  
DanBookPro2015:Desktop frakes$
```

rename the drive **Untitled**. (The Terminal commands I provide here assume that the drive is named Untitled. If the drive isn't named Untitled, the procedure won't work.)

2. Make sure the El Capitan installer (or at least a copy of it), called *Install OS X El Capitan.app*, is in its default location in your main Applications folder (/Applications).

3. Type the following command in Terminal on one line (see the image above), then proceed to Step 3; otherwise, skip to Step 2b:

```
sudo /Applications/Install\ OS\ X\ El\ Capitan.app/\Contents/Resources/createinstallmedia --volume /Volumes/Untitled --applicationpath /Applications/Install\ OS\ X\ El\ Capitan.app --nointeraction
```

4. Launch Terminal (in /Applications/Utilities).

5. *Warning: This step will erase the destination drive or partition, so make sure that it doesn't contain any valuable data.* Paste the copied command into Terminal and press Return.

6. Type your admin-level account password when prompted, and then press Return.

7. You may see the message “To continue we need to erase the disk at /Volumes/Untitled. If you wish to continue type (Y) then press return:” If so, type the letter Y and then press Return. If you don't see this message, you're already set.

The Terminal window displays createinstallmedia's progress as a textual representation of a progress bar: *Erasing Disk: 0%... 10 per-*

cent...20 percent... and so on. You also see a list of the program's tasks as they occur: *Copying installer files to disk...* *Copy complete. Making disk bootable...* *Copying boot files...* *Copy complete.* The procedure can take as little as a couple minutes, or as long as 20 to 30 minutes, depending on how fast your Mac can copy data to the destination drive.

Once you see *Copy Complete. Done.,* as shown in the earlier

screenshot, the process has finished.

Createinstallmedia will have renamed your drive from Untitled to Install OS X El Capitan. You can rename the drive (in the Finder) if you like—renaming it won't prevent it from working properly.

BOOTING FROM THE INSTALLER DRIVE

You can boot any El Capitan-compatible Mac from your new installer

drive. First, connect the drive to your Mac. Then, restart your Mac (or, if it's currently shut down, start it up) while holding down the Option key. When OS X's Startup Manager appears, select the installer drive and then click the arrow below it to proceed with startup. (Alternatively, if your Mac is already booted into OS X, you

may be able to choose the installer drive in the Startup Disk pane of System Preferences, and then click restart. How-

ever, sometimes OS X installer drives don't appear in the Startup Disk window.)

Once booted from your installer drive, you can perform any of the tasks available from the OS X installer's special recovery and restore features. In fact, you'll see the same OS X Utilities screen you get when you boot into OS X Recovery—but unlike with recovery mode, your bootable installer includes the entire installer. ■

YOU CAN BOOT ANY EL CAPITAN-COMPATIBLE MAC FROM YOUR NEW INSTALLER DRIVE.

You might know **Joshua**.

He loves video games, and he owns enough to know they're not all meant for kids. That's why he reminds his friends (at least the ones that have kids) that they all have **big black letters on the box** to help parents find the ones that are best for their families.

You can learn about those ratings at **ESRB.org**


Los Angeles, CA





The iPad Pro is a pilot fish for Apple's ARM Laptop

The latest iPad is a distinctly different creature than its predecessors, and Apple openly compared it to a laptop in specs. But is it a sign of even greater convergence?

BY DAN FRAKES

When you come to a fork in the road, take it, Yogi Berra is alleged to have said. Microsoft chose this bon mot to guide its Windows 8 strategy, converging mobile and desktop in a way that pleased no one. And now the new iPad Pro sits beside the 12-inch MacBook to suggest Apple is approaching that very same fork.

I was confused during Apple's introduction of the 12.9-inch iPad Pro, which has a display so large, it can nearly fit two iPad Air 2s side by side. The Pro's focus on drawing seems highly specialized. And despite some other productivity features, the iPad Pro doesn't seem to have a natural audience. Yes, it has amazing specs, but can a bigger, pencil- and keyboard-compatible iPad really be the answer to Apple's stalled tablet sales?

The iPad Pro is a full-fledged product—more so than the original MacBook Air (which was underpowered, port-poor, and battery-weak); the original iPad (which lacked much app support); and the 12-inch MacBook (which has a poor keyboard and a dearth of ports). Compared to all these other first-gen efforts, the iPad Pro looks much more buttoned-up—if not also incredibly niche.

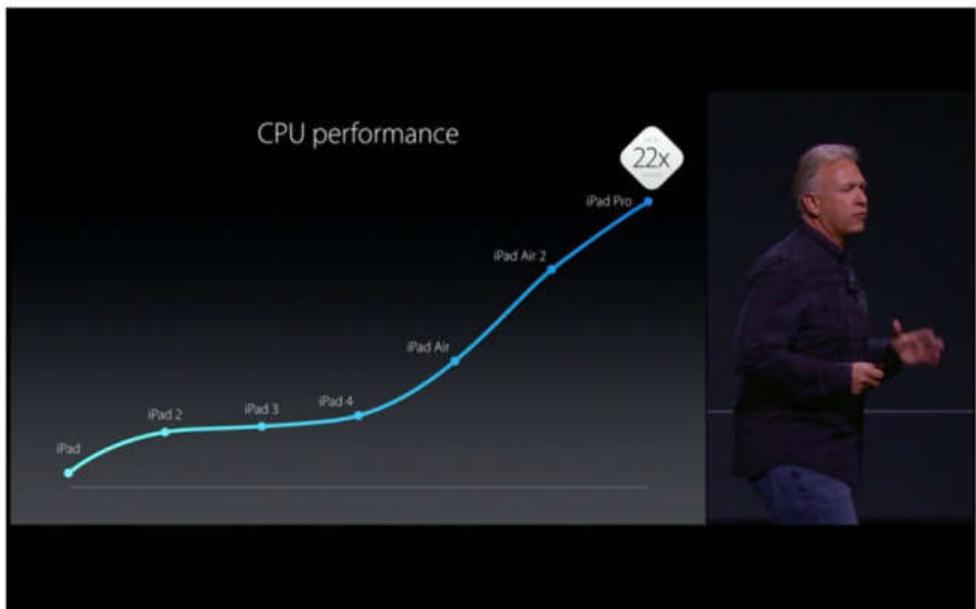
But don't get too caught up on what the iPad Pro is now, because it's also a pilot fish: Apple is testing the waters for future tablet direc-

tions, all while paving the way for an ARM-based laptop running OS X.

ARMED AND READY

Ever since Apple began designing its A-series chips, we've heard rumors that the company is working on a laptop powered by an ARM chip. Certainly, Apple tests all kinds of ideas in locked-down labs. The iPad was built years before it finally shipped, and the iPhone actually came out of its development, not the other way around. Similarly, Apple had a group building OS X on Intel chips long before the PowerPC processor line was dropped.

And thus we can be sure that OS X is running on prototype ARM-based hardware somewhere at One or Two Infinite Loop. While Intel ticks away at producing faster and more efficient processors, Apple focuses on controlling its own destiny. It's been this way since the return of Steve Jobs, and slowly reducing the need for Intel processors would be a reasonable path.



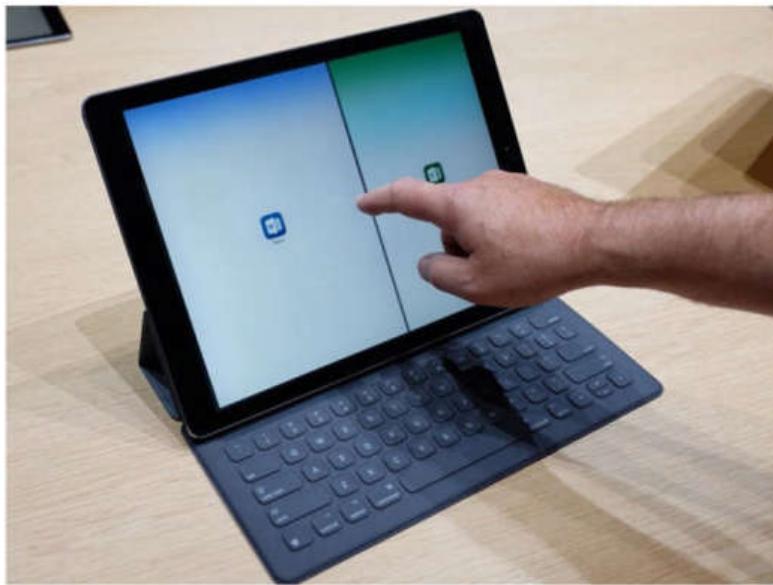
Please note that in his keynote, Phil Schiller discussed iPad performance (go.macworld.com/ipadpro-reveal) in a way Apple has previously avoided. The new tablet has a 64-bit chip that offers “desktop-class performance.” The iPad Pro’s CPU is 22 times faster than the original iPad’s chip, and twice as fast as the iPad Air 2’s processor. The new tablet also has twice as much memory—we know it’s 4GB thanks to an accidental disclosure (go.macworld.com/ipadpro-4gbs) by Adobe. Graphics performance is also 360 times faster than the original iPad.

Apple even noted the Pro has

better performance than 80 percent of the laptops on the market. That 20 percent is key, though. Apple’s laptop sales are just above 10 percent of unit shipments worldwide, and Apple’s lowest-performing model is faster than most other laptops. Thus Apple doesn’t sell any laptops slower than the iPad Pro. The iPad Pro hasn’t yet been benchmarked against notebook computers, but its performance is likely competitive with an entry-level MacBook Air.

Why praise the Pro in this context if it isn’t a test to see whether the market is waiting for something that combines attributes of a laptop and a

“DESKTOP-CLASS,”
Phil Schiller said
about the iPad Pro’s
performance.



AN ARM-BASED LAPTOP
is more likely from
Apple than one with a
touchscreen.

tablet without the drawbacks of either? Even the best tablets suffer from system constraints, while laptops with capacitive touchscreens are highly awkward to use.

Microsoft went down this path, and tried to marry the two. The desktop OS would benefit from touch gesture support, making laptops more flexible, the case went. Meanwhile, phones and tablets could run the same software as on the desktop—except they couldn't, really. The promise of a single OS powering all types of devices is only just beginning to emerge in the Windows universe.

Microsoft's current mission is to make the best native apps for every

OS iteration on which its software can run. Apple made a similar case, explaining how software optimized for the iPad Pro keyboard experience could be as good as, or better than, a comparable laptop version. That's irony, but also good for Apple's future.

A reasonable person could argue the iPad Pro is a niche product that will have a high margin at its price point, and will be embraced by illustrators, artists, architects, and others who already integrate an iPad Air 2 (or a Wacom Cintiq tablet) into their workflow. Indeed, a bigger iPad with a pressure- and direction-sensitive stylus and keyboard just makes everything that's right about the iPad

even better for this highly specialized user base.

But millions of people buying the iPad Pro? That's hard to see, unless I'm misjudging the market.

THE MACINTOSH WAY—WAY, WAY INTO THE FUTURE

In June, *Wall Street Journal* columnist Christopher Mims suggested Apple drop the Mac. He argued that computers were distracting Apple from its core business, and noted that laptops and desktops account for only 10 percent of Apple's revenue. I argued at the time that Apple would be abandoning a loyal audience, including video, design, animation, and illustration professionals—and amateurs, too. iOS devices don't have the performance for high-end computing, and iOS developers can't even build their apps on iPads.

The chips in Apple's Mac lineup will outperform mobile-class processors for the foreseeable future, because mobile devices can't tap into enough power—nor dissipate enough heat—to use the best-performing CPUs and GPUs. Some GPUs calculate specialized operations hundreds of times faster than desktop-class CPUs, which in turn can run dozens of times faster than equivalent mobile chips.

Rather than eschew the fork and take both roads at once, as Microsoft



did, I see Apple's convergence meeting at a paper-thin margin. On one side, trailing off on a curve from cheapest/smallest/slowest to richest/biggest, are iPhones and iPads. On the other side, you'll see an array from Mac Pro down to MacBook Air.

From a use-case perspective, the interstice is very thin between an ARM-based OS X laptop with a MacBook-style keyboard and iPad Pro specs, and an ARM-based iOS tablet with MacBook capabilities but a touchscreen and only an option—not a requirement—for a keyboard. The two devices might even look quite similar, but a buyer will pick one

AS THE SPACE BETWEEN
mobile and desktop performance shrinks, people might wind up choosing based on preferred form-factor and which software they need.

over the other for distinct reasons: the way they input and interact with data, and the range of software they need to use on a daily basis.

We could speculate that Apple is aiming toward hybrid convergence: a single device with the next generation of A-series chip that either runs both iOS and OS X as a dual-boot, or is an OS X laptop with all the touch advantages of an iOS system. But Apple doesn't make these sorts of compromises. It tries to avoid producing equipment that's neither fish nor fowl—not fully in one world or another.

Rather, the iPad Pro lets Apple test the parameters of how far it can push

its current technology toward providing laptop performance without making an underperforming OS X-based ARM system. It's an experiment; the end goal isn't to follow Microsoft down a path already shown to diverge in use cases and users' needs.

Apple doesn't have to converge entirely. It can have two distinct, parallel, and separately useful general computer operating systems with their own strengths, meeting just in the middle without ever touching. Apple could take the path less traveled by, and it would make all the difference. ■

Reviews

The Latest Mac Products
Reviewed & Rated



MAC GEMS ARE APPS THAT OFFER
STANDOUT UTILITY OR UNIQUE
FEATURES AT A GREAT PRICE.



SPREADSHEET APP

EXCEL 2016 FOR MAC: APP CAN DO THE JOB—AS LONG AS YOU DON'T RELY ON MACROS

BY ROB GRIFFITHS

ONE OF THE ADVANTAGES OF doing the last Office 2016 product review is that I can leverage work others have done to save you, the reader, some redundant explanation. So if you haven't yet, check out the reviews of Outlook (go.macworld.com/outlook2016), PowerPoint (go.macworld.com/ppt2016), and Word (go.macworld.com/word2016).

Much of what you'll read about in those apps applies to Excel 2016 for Mac (go.macworld.com/2016), too: Mac-specific features like multitouch gestures, full-screen support, Retina graphics, a cleaned-up and easily-hidden ribbon, a fixed task pane that replaces floating palettes for formatting, integrated support for OneDrive, and excellent cross-platform file compatibility. You can read more about these features in the above-mentioned reviews; they work just the same way in the new Excel. (As

Slicers let you limit what you see in a pivot table; you can add one or more to really refine what you see. Here, only data from 2012, 2013, and 2015 is visible.

with the other apps, you can only presently get Excel 2016 if you're an Office 365 subscriber.)

WHAT ELSE IS NEW

When you launch Excel 2016, you'll be greeted by Excel's clean new appearance. You can choose from a colored header (new in 2016) or the usual gray header from previous releases. Workbooks with multiple tabs get a much cleaner tab bar, losing the fake 3D appearance. Colored tabs are now colored with a thin bar, instead of a gradated fill on the entire tab, making it easier to read tab names. Overall, I found the new interface pleasant and easier to use than in older versions of Excel.

Excel includes the Smart Lookup feature found in other Office apps. Smart Lookup uses Bing to show contextual information for a highlighted word—while this is undoubtedly useful in Word, I didn't really find myself

EXCEL 2016 FOR MAC



AT A GLANCE

If you're an Excel user who doesn't rely on macros, and doesn't need to customize your menus and commands, Excel 2016 has a lot going for it.

PROS

- Modernized user interface
- Mac-specific features
- Easier charting
- Pivot table slicing

CONS

- Macro support is basically missing
- No menu or command shortcut customizations
- A number of shortcuts have been removed or changed

PRICE WHEN RATED

\$70 per year or \$7 per month for Office 365 Personal subscription; \$100 per year or \$10 per month for Office 365 Home subscription; \$140 for Office Home & Student 2013 (one-time purchase)

COMPANY

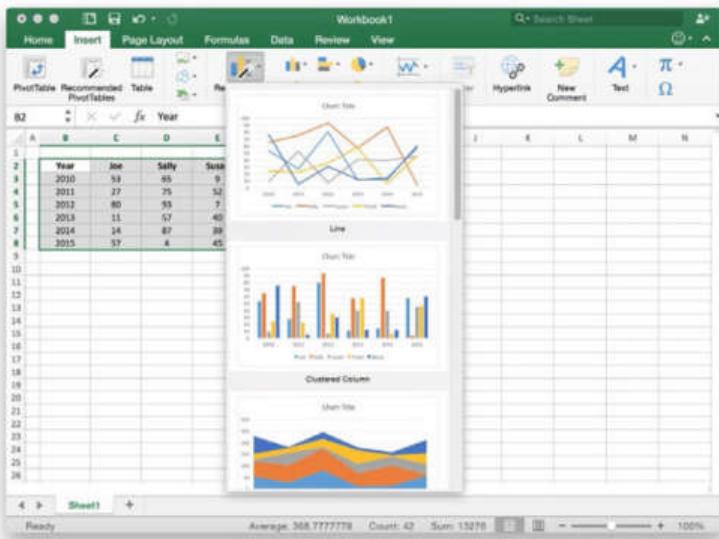
Microsoft

using it much while working on spreadsheets. But if you suddenly need to look up everything there is to know about the word *amortization*, Smart Lookup is ready for you.

So what's new and unique to Excel 2016? Quite a few things, starting with the removal of the Standard and Formatting toolbars. While you could hide these in Excel 2011, they're completely gone—replaced by the task pane—in Excel 2016. I don't miss them at all, as they were redundant and took up screen space.

Also new is greatly improved sharing. Save your file to OneDrive, and you can then use a sharing button to invite people via their email address, copy a link you can then email to others, or send the workbook as either a PDF or native workbook attachment. Recipients can (assuming you grant permission) edit your file, even if they don't own Excel, through Microsoft's web-hosted Excel app.

Fans of pivot tables will find a new slicer tool that greatly increases the usability of pivot tables. A slicer is a way to limit the data you see in a pivot table. In a pivot table showing years of sales by salesperson, for example, you can use slicers to restrict the table to one or more years, or to one or more salespeople.



EXCEL 2016 HELPS YOU pick the right chart by analyzing your data and presenting a list of charts you can use to visualize that data.

Another “new” feature is the inclusion of the Analysis Toolpak add-on. I say new in quotes because while new to Excel 2016, long-time Excel vets will remember the Analysis Toolpak from the pre-OS X days. If you need to do complex statistical and/or engineering analysis—think

Anova, Fourier Analysis, Regression, etc.—you’ll find the Analysis Toolpak invaluable. Also included are a number of formulas that were previously found only in Excel 2013 for Windows, improving cross-platform compatibility. Again in the interest of cross-platform compatibility, many Excel for Windows shortcuts now work on the Mac, which is quite useful if you regularly work on both platforms.

Excel also makes charting easier by analyzing your data and letting you select a recommended chart from a convenient drop-down menu. Select the data you want graphed, click the Recommended Charts button, then browse the mini chart previews to find the one that best matches what you’re trying to say.

WHAT'S GONE

If you’re a serious user of Excel’s macro facilities, you are in for a big letdown: Excel’s 2016 support for macros is basically missing (go.macworld.com/excel16nomacros). While you can create and record macros, the macro editor is crippled: there’s no way to insert procedures, modules, etc. About all you can do is hand-edit a recorded macro. Further, you can’t create custom menu commands, as you could in prior versions of Excel. (Microsoft details its Visual Basic support in an FAQ: go.macworld.com/t10office4mac). In short, if you need macros, stick to Excel 2011. After the great progress made with macros in the 2011 release, this is a real letdown.

Assuming the macro issue doesn’t affect you, the only other real problem I have with Excel 2016 is the loss of customizability of keyboard shortcuts and menus. In older Excel versions, you could easily customize which commands show on which menus, and even create entirely new menus containing just the commands you specify.

You could also assign one or more keyboard shortcuts to any Excel command, including commands that you can’t program via OS X’s

EXCEL ALSO MAKES CHARTING EASIER BY ANALYZING YOUR DATA AND LETTING YOU SELECT A RECOMMENDED CHART FROM A CONVENIENT DROP-DOWN MENU.

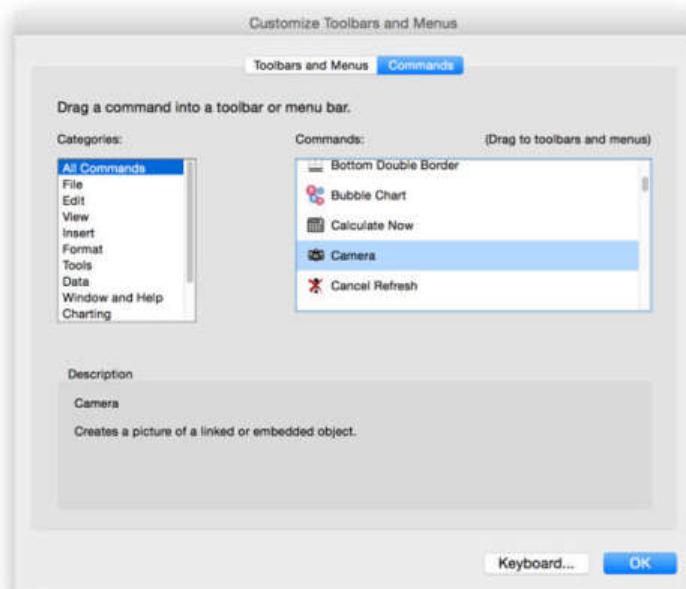
keyboard shortcut interface. The dialog that handles all of this customization is missing from Excel 2016; if you don't like what Microsoft gave you for menus and certain shortcuts, you're stuck with them.

A related issue is that some familiar—and useful—shortcuts are now changed or gone. Control-L and Control-K used to insert and delete rows or columns; now you must use three fingers (Shift-Command-Equal Sign) to add a row, and Command-Minus Sign to remove a row. You also used to be able to Option-click a row or column to quickly add a new blank row or column; this no longer works. If you use the keyboard a lot, you'll want to open Excel's help and search "keyboard shortcuts," where you'll find a huge list of shortcuts.

BOTTOM LINE

If you're an Excel user who doesn't rely on macros, and doesn't need to customize your menus and commands, Excel 2016 has a lot going for it. The new interface is pleasant, the cross-platform features are a welcome addition, the performance is very good, and the Mac-specific features make Excel feel as native as any other Mac app.

But if you do need macros and customizability, then you're going to have to stick to Excel 2011...and that's too bad, because Excel 2016 is a solid release in every other regard. ■



THIS DIALOG IN EXCEL 2011 allowed you to easily customize Excel's menus and commands—even adding a new menu to the menu bar, if you desired.



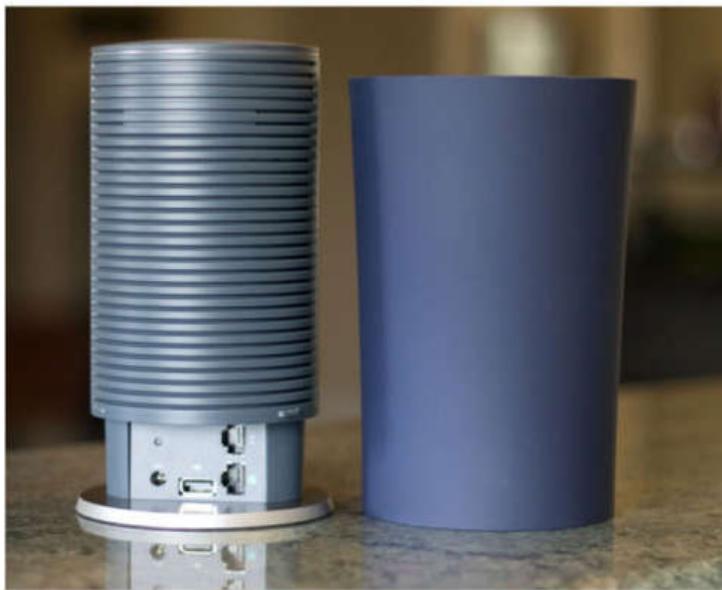
WI-FI ROUTER

GOOGLE ONHUB WI-FI ROUTER: IT'S DESIGNED TO CODDLER NOVICES AND ANNOY POWER USERS

BY MICHAEL BROWN

YOU'LL EITHER LOVE or hate the new OnHub Wi-Fi router (onhub.com) that Google and TP-Link have cooked up. If you're of the "I just want it to work" mindset, you'll dig it. If you're an enthusiast who likes to bend hardware to your will, tweaking knobs and being aware of everything that's going on under the hood, it will drive you nuts.

The OnHub is a dual-band router co-designed by Google and TP-Link (manufactured by the latter) that operates networks on both the 2.4GHz (802.11b/g/n) and 5GHz (802.11n/a/ac) frequency bands simultaneously.



I REMOVED THE ONHUB'S SLEEVE, so you can better see how it tapers at the top.

But both networks use the same SSID, and the router decides for you which network each client should use. As I discovered during benchmarking, those assignments can change without notice if the router decides it can provide better service, but it's not always right.

The only way you can set up the OnHub is with a smartphone or tablet (Android or iOS) and Google's app. Punch in the router's IP address on a web browser, the way an enthusiast would configure a router, and you'll see a polite message telling you to open the Google On app if you want to change any of its settings. The app will helpfully guide you through the process of connecting the router to your broadband gateway. The speaker at the top of the router is supposed to emit a tone that automatically pairs your Android phone to the router. That didn't work during my installation, so I had to type in a code that was printed on the bottom of the router (as I would have done if I'd set it up with an iPhone).

The setup process is very simple, because there's not all that much for you to do. You don't need an admin password—the phone pairing establishes that level of security—and you can't finish the installation

TP-LINK ONHUB WI-FI ROUTER



AT A GLANCE

The OnHub balances price and performance, and makes configuring your Wi-Fi simple. But many decisions are made for you, and they can't be changed.

PROS

- Extremely easy to set up and use
- Attractive price/performance ratio
- Can be managed from the cloud
- Trusted platform module to foil hackers

CONS

- Many settings can't be changed
- No USB storage or printer sharing
- No guest network
- Only one LAN port

PRICE WHEN RATED

\$200

COMPANY

Google

TP-Link

without setting a Wi-Fi password (the same one is used for both its 2.4GHz and 5GHz networks). You don't have to write the password down, because you can look it up on your phone.

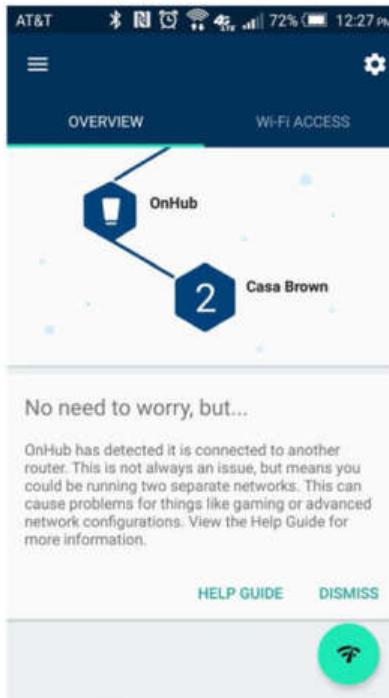
The OnHub will even recognize when you're installing it behind the crappy modem/router combo your ISP gave you and offer to operate in bridge mode (but it won't advise you to turn off that router's Wi-Fi radio—if it has one—and OnHub will end up competing with the router for bandwidth if you don't).

Apart from that, the Google On app is excellent, popping up with useful information at appropriate times, and offering oodles of context-sensitive help. It will also run tests on your network and your Internet connection for you.

Rather than let the app put the OnHub into bridge mode, I configured my ISP's modem/router to operate in bridge mode, so that the OnHub would handle all routing duties and I'd get a more accurate picture of its performance. (That's also how I have the modem configured when it's connected to my usual router.)

The OnHub has one gigabit WAN port (as is typical of home routers), but it also has just one gigabit LAN port. Most routers have four; Apple's Airport Extreme and Airport Time Capsule each have three LAN ports).

There's nothing to stop you from connecting that one LAN port to a stand-alone switch with as many ports as you need, of course, but Google would really, really like you to put the OnHub out in the open where everyone can admire its industrial design: a blue (or black) cylinder that flares out just a bit at the top (the part you see is actually a



THE ONHUB DETECTED that it was installing it behind another router (the DSL modem/router combo provided by my ISP).

sleeve that slides over and covers most of the router). Unfortunately, that sleeve has a very small cutout at the bottom, from which the power and Ethernet cables emerge. If you don't use the ribbon cables that come in the box, you might not be able to lock the sleeve into place, because the hoods on more conventional cables will get in the way.

Google wants you to put the OnHub out in the open for two reasons: It will perform better than if you hide it behind the doors of a closet (duh), and they want you to advertise that you're using their router. I can't argue with the first reason, and I can't blame Google for the second. What Google seems to forget, however, is that you'll need to hardwire its beautiful router to the invariably ugly modem/gateway your ISP gave you. So for most people, router placement will be dictated by where they can put the gateway.

This is less of an issue for the tech enthusiast, who is likely to have a homerun closet where all of the home's phone, Ethernet, and coaxial (for TV) lines terminate. In that case, you put the OnHub anywhere in your home with two Ethernet ports in the wall (one to connect to the modem and one to connect to the rest of your network). But the OnHub is clearly not intended for the tech enthusiast.

Regardless of your interest level, you'll want to know that the OnHub

THE ONHUB HAS just one LAN port (and one WAN port). And its USB 3.0 port is currently reserved for uploading a fresh image of its operating system should the one on board become corrupted.

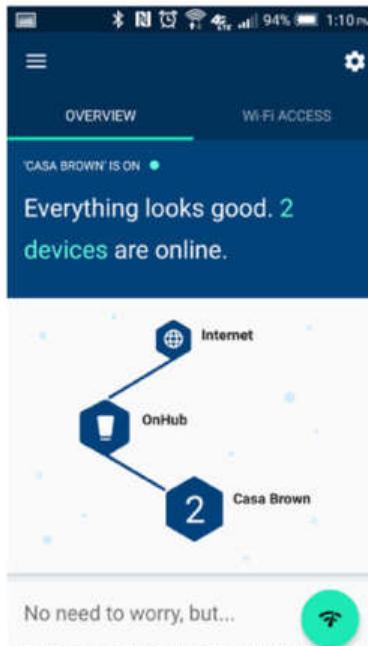


is missing some features commonly found in routers in almost every price range these days. For instance, the OnHub is outfitted with one USB 3.0 port; most routers have one USB 3.0 port and one USB 2.0 port, so you can share both a printer and storage on your network. You can't do either with the OnHub. The sole function of its USB port—for now, at least—is to restore an image of its operating system should it get borked.

Because you can't share storage via the OnHub, its designers decided they didn't need to put a DLNA media server inside it either (it does have a UPnP server). That's not a big deal if you stream all your media from commercial services such as Netflix, Apple Music, Hulu, or Google Play, but it will suck if you rip your own music and movies and store them on a USB hard drive. Then again, enthusiasts are more likely to store their media on a NAS box or even a home server, so maybe they won't care.

Google also made no provision for setting up an FTP server so you can access an attached storage device over the Internet. You can't configure the OnHub to perform as a wireless access point, nor can you set it up to operate as a wireless bridge (even though with just one LAN port, you wouldn't want to). The OnHub has no VPN server, either.

There are provisions for port forwarding, using different DNS servers, assigning static IP addresses, and the like. You can also access and manage the OnHub via the cloud (using the app), and you can grant permission to other people to manage the router this way. If you're looking for a router to recommend to friends and family who look to you



TOUCH THE LITTLE GREEN
BUTTON on the Google On app, and the router will run a series of performance tests on your router and network.

for tech support, the OnHub is a good choice.

The OnHub does have several features not commonly found on consumer routers;

unfortunately, most of them aren't very useful right now. One feature that is useful is the OnHub's trusted platform module (TPM), a component more commonly found in enterprise-class hardware. The TPM

prevents the OnHub from booting if it doesn't recognize what's installed on it. Google tells me the OnHub's firmware, kernel, and user space code—and all updates—are cryptographically signed by Google. That's a great idea that should prevent even sophisticated hackers from hijacking the router, but it also means that it will probably never be able to run alternative open-source firmware. Here again, something only enthusiasts will care about.

Three other features related to the Internet of Things could be useful someday: Support for Bluetooth Smart (a very low-power version of the popular wireless protocol), Weave (the protocol Nest devices use to communicate with each other), and IEEE 802.15.4 (a connected-home standard that is the basis for ZigBee).



THE ONHUB IS OUTFITTED with 13 antennas mounted inside its cylindrical enclosure.

THE ONHUB'S SPEAKER doesn't seem to do much right now.

Google's product literature says "This means that OnHub can evolve along with your connected life," but that presupposes that the evolution of your connected life will involve Bluetooth Smart, Weave, and ZigBee. Competing initiatives such as

AllJoyn, Z-Wave, IoTivity, or even Insteon or something else that's yet to emerge could end up being the de facto connected-home standards instead. Don't buy an OnHub today in the name of future-proofing your home, because the future is too hazy to see right now.

PERFORMANCE WITH A MAC

I use Access Agility's WiFiPerf (go.macworld.com/wifiperf) to measure TCP throughput between a server (an older iMac with an Intel Core i7 CPU) and a client (a late-2013 MacBook Pro with an Intel Core i5 CPU and an onboard Apple AirPort Extreme 802.11ac Wi-Fi adapter). The first time I powered up the OnHub, it decided to use channel 36 on its 5GHz band. As I said earlier, I generally prefer to use channel 153, because it offers a little more bandwidth, but the OnHub doesn't let you choose. After power-cycling the router, it decided to use channel 149, so I was able to test performance on both bands. This behavior was not consistent, however, which complicated my benchmarking routine.

With Mac clients, interestingly enough, the OnHub delivered higher throughput on channel 36 than it did on channel 149—at least at close range (with the client in the same room, nine feet from the router). The OnHub significantly outperformed Apple's 802.11ac AirPort Time Capsule, too. The more-expensive **Asus RT-AC3200U** (\$279 average online street price; asus.com), on the other hand, crushed both of the other routers, especially at medium range (with the client 33 feet from the router, separated by one insulated interior wall). (Note: the AC3200 designation shows that the Asus promises to deliver 600Mbps on its 2.4GHz network, 1300Mbps on one 5GHz network, and 1300Mbps on a second 5GHz network).

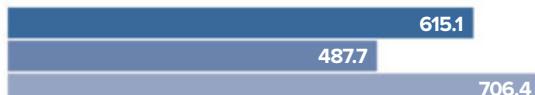
When I managed to get the OnHub to use channel 149, its perfor-

802.11ac Performance

Channel 36; Tested with a late-2013 MacBook Pro with a 3x3 AirPort Extreme Wi-Fi adapter

Google/TP-Link OnHub Apple Airport Time Capsule Asus RT-AC3200U

BEDROOM CLIENT 9 FEET FROM ROUTER



GREAT ROOM CLIENT 33 FEET FROM ROUTER



SUN ROOM CLIENT 65 FEET FROM ROUTER



MEGABITS PER SECOND. LONGER IS BETTER.

mance at close range dropped, and its long-range performance (with the client 65 feet from the router, separated by two insulated interior walls) stayed about the same, but its midrange performance almost tripled. The AirPort Time Capsule, meanwhile, performed slightly better at close range on this channel, and was much faster when the client was further away. The Asus's performance dropped at close range, was slightly faster with the client at mid-range, and was much faster with the client at distance.



SHOULD YOU BUY AN ONHUB?

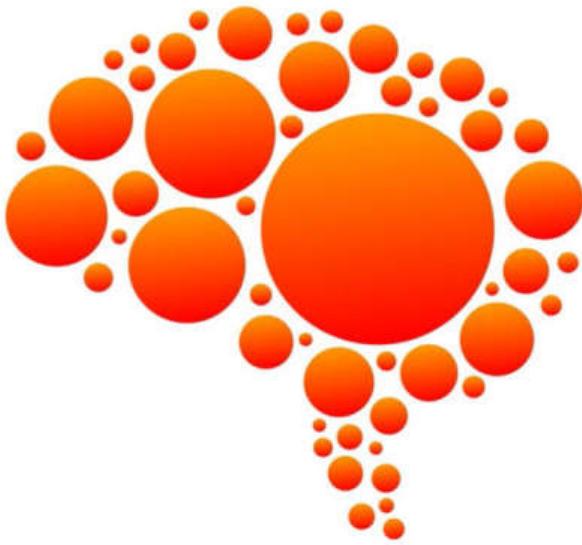
If you want a router that just works and handles the basics well, with minimal intervention on your part, the OnHub is a good choice. It's also a good choice for a power user to recommend to the tech-savvy family and friends looking to them for network tech support—the price and performance are good, and the OnHub will make troubleshooting easier. You don't even need to worry about making sure the router always has the latest firmware—it will automatically download and install it for you.

Power users, on the other hand, won't be as satisfied with the OnHub for their own use. It's a strong performer, and it has some innovative features—including that TPM module to foil hackers—but its feature set is much too limited: The OnHub won't let you share storage or a printer over your network; it doesn't have DLNA, ftp, or VPN servers; and it has just one LAN port.

While I appreciate hardware that *recommends* settings it thinks will deliver the highest performance, I want the freedom to override those recommendations if I don't agree with them. You can't control which channels the OnHub operates on, you can't choose the network your clients join; heck, the OnHub doesn't even provide for a guest network.

Google is currently working with Asus on the design of a second OnHub model. Given Asus's history of delivering high-performance routers stuffed to the gills with features, here's hoping that *that* collaboration yields a router that will be more appealing to power users. ■

THE ONHUB'S DESIGNERS didn't leave much room for cables to exit the router's sleeve.



NOTES APP

STICKYBRAIN: SLICK NOTES MANAGER TURNS ITS BACK ON MOBILE SYNC

BY J.R. BOOKWALTER

THE VIRTUAL EQUIVALENT of Post-It notes, Stickies have a storied history on the Mac, dating way back to the release of System 7.5 in 1994. More than a decade ago, this utility became something of an afterthought for Apple, who evicted the cute little squares from the Finder beginning with OS X Tiger, where they settled peacefully into retirement as Dashboard widgets.

Perhaps sensing Mac owners had bored of colorful desktop notes, developer Chronos soon abandoned its own third-party take on the concept. Apparently you can't keep a good sticky down, because StickyBrain (go.macworld.com/stickybrain) has been resurrected for a new generation. But can it remain relevant in a mobile-first world?

STICKYBRAIN 1.0



AT A GLANCE

StickyBrain returns after a 10-year absence in an attempt to make virtual Post-It notes on the Mac cool again.

PROS

- Attach applications to notes as a reminder
- Hierarchical folders and subfolders
- Robust import, export, and print options

CONS

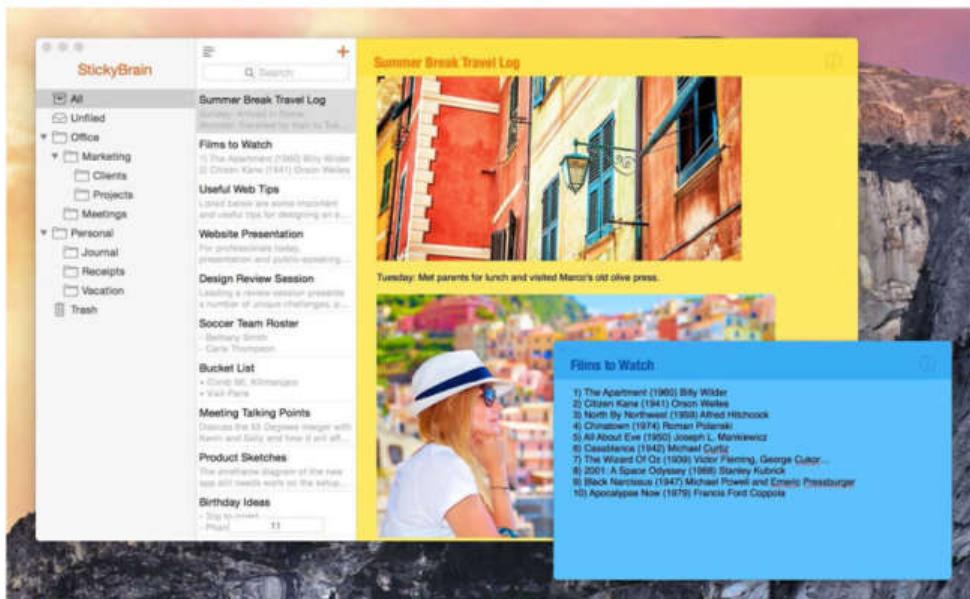
- No mobile or cloud sync
- Few significant improvements over OS X El Capitan built-in Notes
- Notes can't be stuck to desktop

PRICE WHEN RATED

\$30 single user;
\$50 family pack

COMPANY

Chronos



THIS IS YOUR BRAIN

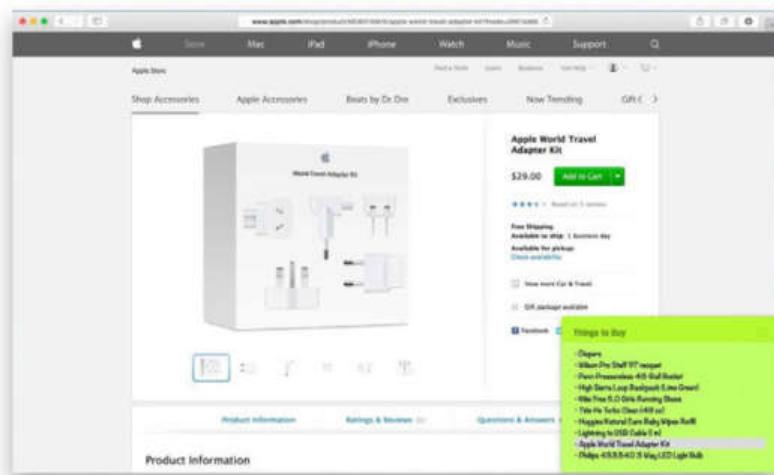
The contemporary StickyBrain starts completely from scratch as an entirely new application, rebuilt from the ground up using Apple's new Swift (go.macworld.com/swiftmac) programming language. The result is a leaner, faster note manager that makes it easy to find whatever you're looking for in a snap and organize information using hierarchical folders.

Chronos likens StickyBrain to a "really big drawer" where users can deposit scraps of information, including screenshots, photos, and text files imported from Microsoft Word,TextEdit, RTF, and HTML files with basic formatting intact. If you've managed to hang onto your old Apple Stickies over the years, StickyBrain can import those as well, freeing them from a Dashboard-only prison.

Naturally, StickyBrain retains the whimsical color schemes that made Stickies popular in the first place. Note backgrounds can be assigned 10 different colors, or kept plain white, should you prefer not to get too fancy. There's no support for custom colors, and I found a bug where the default note color set in Preferences refused to stick (pun intended) until I selected it again on the actual note.

STICKYBRAIN RETAINS THE
familiar look and feel of
Apple's built-in Notes, but
with new improvements
like hierarchical folders and
assignable background
colors.

StickyBrain follows the familiar three-panel approach used by Apple's built-in Notes, with a list of notes in the center and a viewer at right, but here the left panel displays All, Unfiled, and Trash views, as well as custom folders created by the user; subfolders can also be added for better organization.



GET ATTACHED

Although StickyBrain notes can't actually be attached to the desktop like Stickies could, they're not strictly confined to the viewer, either. As long as the application is open, notes can exist in their own windows, where they can be viewed or edited directly.

Taking this freedom one step further, StickyBrain also allows other applications to be attached to notes. For example, a list of products you intend to buy from Amazon or another online destination can be configured to automatically hover above the web browser as a reminder on your next virtual shopping trip. It's a handy and unique feature I haven't seen before.

Unfortunately, Chronos brought StickyBrain out of retirement on the heels of Apple introducing enhancements to its free, built-in Notes with OS X El Capitan (go.macworld.com/elcapnotes), including the ability to create checklists and add photos, videos, web URLs, or map locations directly from other apps. That makes it tough to justify spending \$30 on a less-capable third-party solution.

Worse yet, StickyBrain lacks support for syncing to iCloud and popular cloud services like Dropbox, meaning users who abandon Notes would have no way to view or edit their library from an iOS device. It's a curious

ONE OF THE neatest StickyBrain features allow applications to be attached to notes as reminders when shopping, for example.

The screenshot shows the StickyBrain application window. On the left is a sidebar with categories like 'Unfiled', 'Office', 'Marketing', 'Personal', and 'Bucket List'. The main area contains several note cards:

- Bucket List:**
 - # Come 3k kilometers in 3 months
 - Invent things
 - Inspiring Quotes
 - "I have no doubt how many you go to see so you are not alone" -- Confucius
 - Things to Buy
 - Soccer Team Poster
- Close-Up Photography Blog:**

Close-up photography works best finding a subject that will be interesting in the larger audience. For example, I was shooting a series of shots for a news pre-school in prior rolls. One close-up shot might be a young pre-adolescent doing something creative, thoughtful, or calming. Once you've found a great subject item your desired activity, then try to find a captivating element in the composition that will make the shot stand out from the rest. Close-up shots are great for marketing. Not only are the bubbles colorful and eye-catching, but they're in motion which makes the shot even more engaging.
- Traffic Accident Witness Report:**

On July 17th at about 8:00 pm, I was traveling southbound on Main Street at the intersection of Main and Elm. I was driving my car in the right lane. I saw a blue truck and a minivan turn left from Elm onto Main. The light turned yellow. When the light turned yellow, there were two cars in front of me (a blue truck was immediately in front of me and a red minivan was in front of the blue truck). As I stopped, my brakes were immediately applied. I heard a screech and a sound through the intersection without letting them brake. Because the light had turned yellow, I was paying close attention to the cars in front of me. I was slightly to the right of the center line. I heard a screech and a sound through the intersection, but because the tail lights of the blue truck did not go on, I had no reason to slow down since it was already in the intersection when the light turned yellow.
- Summer Break Travel Log:**

Summer travel is family friendly. Traveler traveled by train in Thailand.
- Films to Watch:**

The Department (1989), Billy Winter, Mr. Glass, Money (1996), Ocean's Eleven
- Useful Web Sites:**

• 18
- Traffic Accident Witness Report for Insurance Companies:**

On July 17th at about 8:00 pm, I was traveling southbound on Main Street at the intersection of Main and Elm. I was driving my car in the right lane. I saw a blue truck and a minivan turn left from Elm onto Main. The light turned yellow. When the light turned yellow, there were two cars in front of me (a blue truck was immediately in front of me and a red minivan was in front of the blue truck). As I stopped, my brakes were immediately applied. I heard a screech and a sound through the intersection without letting them brake. Because the light had turned yellow, I was paying close attention to the cars in front of me. I was slightly to the right of the center line. I heard a screech and a sound through the intersection, but because the tail lights of the blue truck did not go on, I had no reason to slow down since it was already in the intersection when the light turned yellow.
- Soccer Team Roster:**

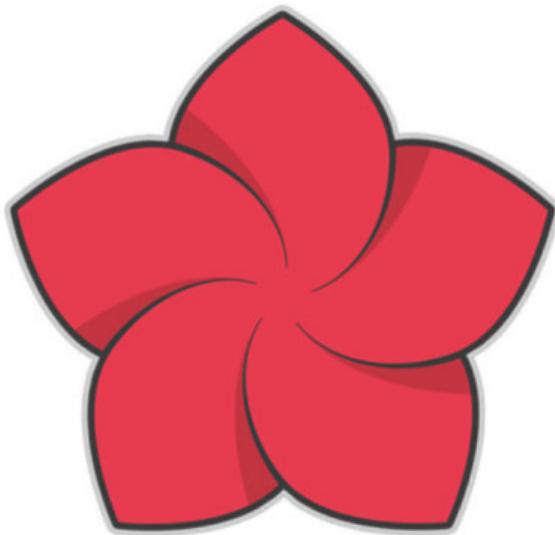
#23 Brittany Smith	Goalkeeper
#03 Carla Thompson	Left Defender
#17 Courtney Thompson	Left Center Defender
#21 Tina Stevens	Right Center Defender
#29 Tammy Southern	Right Defender
#50 Lisa Fitzgerald	Left Midfielder
#00 Stephanie Carly	Central Defensive Midfielder
#21 Laura Stevenson	Right Midfielder
#10 Leah Williams	Left Winger
#49 Trisha Brown	Center Forward
#04 Nicole Davis	Right Forward
- Things to Buy:**
 - Diapers
 - Wilson Pro Staff 97 tennis rackets
 - Penn Pressures 48" Beach Ball
 - High Sierra Long Backpack (lime Green)
 - Nike Free 5.0 Girls Running Shoes
 - Ta Ta Turkey Clean (48 oz)
 - Huggies Natural Care Baby Wipes Refill
 - Lighting is USB Cable II w/
 - Apple World Travel Adapter Kit
 - Philips 4555405 3-Way LED Light Bulb

omission considering the previous version included sync with Palm and iPod devices, a rather forward-thinking concept in the pre-iPhone era.

BOTTOM LINE

StickyBrain is a slick Mac note manager with several niceties like attaching applications to notes, but the lack of mobile sync and the looming shadow of improvements coming to OS X El Capitan's built-in Notes make this a cautious recommendation for now. ■

STICKYBRAIN NOTES DON'T
only have to live in the viewer, but they can't be stuck to the Finder desktop the way Apple's Stickies once could.



CLOUD STORAGE SERVICE

EXPANDRIVE 5: CLOUD STORAGE, NOW APPEARING ON YOUR DESKTOP

BY J.R. BOOKWALTER

CLOUD STORAGE SERVICES have alleviated many complications for users, but convenient access to those files often comes with an entirely different set of headaches. Drag-and-drop to and from a web browser isn't very reliable, while installing desktop applications for each service winds up taxing even the fastest of systems.

For only \$50, ExpanDrive (expandrive.com) is the more common-sense choice: Multiple cloud services which can be mounted as readable, writeable drives on your Mac, visible from the Finder and other applications alongside locally-attached storage devices.

EXPANDRIVE 1.0



AT A GLANCE

ExpanDrive 5 makes accessing popular cloud services and servers as easy as mounting a local hard drive on the Mac.

PROS

- Mount cloud storage and network servers as local Mac drives
- Fast background transfers for most popular services
- Drive Manager makes it easy to connect/disconnect

CONS

- Slower, real-time SFTP/FTP transfers (fix promised for 5.1 update)
- Inconsistent color schemes for drive icons

PRICE WHEN RATED

\$50 single user; multi-user pricing available

COMPANY

ExpanDrive

MOUNT UP

ExpanDrive 5 offers an impressive list of services, including heavyweights like Dropbox, Google Drive, and Microsoft OneDrive, as well as FTP/SFTP, Amazon S3, and WebDAV. With the latest version, Amazon Cloud Drive joins the fold, making this an ideal solution for taking advantage of the e-tailer's generous \$60 per year unlimited storage.

From the menu bar, the Drive Manager window displays a list of added services. Each can be set to mount at startup, or manually connected with the options at right. The magnifying glass button opens

the drive in the Finder, although ExpanDrive does this by default when connected (this can be turned off in Settings).

Cloud storage drives appear on the desktop with a traditional silver drive icon, while others are color-coded by type—blue (FTP), red (SFTP) or orange (WebDAV), for example. A slightly different, inconsistent color scheme is used in Drive Manager, but each service can be assigned custom nicknames to avoid confusion.

Once mounted, ExpanDrive volumes act pretty much the way you'd expect: Files can be dragged and dropped or pre-viewed using QuickLook, and you can create new folders or rename existing ones. Naturally, how fast this happens depends upon your internet speed, but ExpanDrive proved exceptionally peppy on my 50 Mbps down connection.



EXPANDRIVE DRIVES APPEAR in the Finder alongside local storage, with custom volume names and different colors for FTP and WebDAV services.

REBUILT FOR SPEED

ExpanDrive's multi-threaded connection engine makes nearly everything responsive while maintaining optimal system performance. There are exceptions: The Finder hangs for short periods while copying files to a Dreamhost SFTP server

when the window is open. (ExpanDrive promises big FTP improvements ahead with a free 5.1 update.)

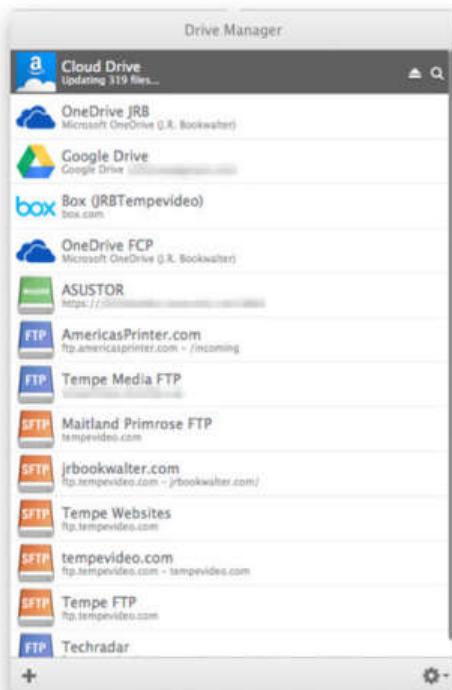
Earlier versions relied on the trouble-prone MacFUSE to do the heavy lifting, but ExpanDrive 5 now works independently, with full 64-bit support. The company calls it a “near-total rewrite” of the application’s core functionality, clocking in at up to 10x faster experience in many cases—with the most popular services, the difference is dramatic compared to previous versions. ExpanDrive also now automatically resumes interrupted transfers next time you’re connected, a convenient addition for MacBook owners on the go.

Transfers appear to happen within seconds, but are actually uploaded in the background, similar to the behavior of official client applications like Dropbox. While uploading or updating, ExpanDrive displays a small sync indicator in the lower right corner; the current status is also shown in the Drive Manager window. Services like FTP currently transfer in real time, displaying a Finder progress bar throughout the entire process like local drives.

This is the most impressive version of ExpanDrive in the seven years I’ve been using it, and the developers move quickly to stomp out any bugs that may arise—no small feat when dealing with such a diverse variety of services. I did experience an issue where Amazon Cloud Drive would only display the first 200 files, but a fix is already in place with the latest update. One last gripe: I’m really not a fan of the new “starfish” branding—bring back the old icon, please!

BOTTOM LINE

ExpanDrive 5 adds Amazon Cloud Drive to its arsenal of popular cloud storage and servers with the fastest and most reliable version to date. ■



EXPANDRIVE LIVES IN the menu bar, where the Drive Manager window controls which services are connected or disconnected.

Hot Stuff

What We're
Raving About
This Month



PHILIPS HUE BRIDGE

Philips recently added HomeKit support to its \$60 Hue Bridge system (meethue.com), which means users can now control their Hue light bulbs from their iPhones via Siri. With HomeKit, users can adjust the lighting through voice commands on the iPhone, iPad, or Apple Watch, and they can also set more complicated “scenes,” such as one that turns off all the lights and turns down the thermostat for the night. Existing Hue users won’t have to replace any of their bulbs, and can get the new hub, which acts as the link between the smart bulbs and other devices on the same local Wi-Fi network, at a discounted price of \$40 for a limited time. New users can get it for \$60, and the new hub will be included in Hue Starter Kits from now on. **—JARED NEWMAN**



RUNTASTIC MOMENT

Runtastic's \$130 Moment (runtastic.com) looks like a regular watch, but actually counts your steps and active minutes. A quick glance at its face will show you not only the time, but also your progress toward the day's goals. You'll still have to fire up the companion Runtastic app on your iPhone to see your actual step count, but the watch's dial can show you if you're halfway there, almost there, or just getting started. In the app, you can set goals based on steps taken, active minutes, or calories burned, and whatever you choose in the app will be indicated by the watch's second dial. Runtastic is offering the Moment in four collections, each with a slightly different style. All of them feature stainless steel cases, scratch-resistant glass, and standard watch band attachments, so you can easily swap it out for any band you want. —**SUSIE OCHS**

Hot Stuff

MOSHI SPATIA

The \$400 Spatia (moshi.com) is a wireless AirPlay sound system that not only looks great, but was designed to work specifically with Apple devices. According to Moshi, the Spatia “fills your home with spacious, high-fidelity sound,” thanks to its five individual speakers: Two silk dome tweeters, two mid-range drivers, and a downward firing subwoofer. The Spatia also has a dedicated app that acts as a remote, helps you get your speaker set up, and allows you to customize and save preferred sound profiles through its adjustable equalizer. **—JOEL MATHIS**



NOVELS ROCK 'N' ROLL
STAND-UP COMEDY JAZZ
VIDEO GAMES MOVIES
COMIC BOOKS TALK RADIO

EVERY NEW ART FORM HAS ITS **FIGHT FOR FREE SPEECH.**

OUR TIME IS NOW
FIGHT FOR YOUR VIDEO GAMES



V I D E O G A M E V O T E R S . O R G



Bottom line: Yes, you should upgrade to iOS 9

It's faster and more secure, it'll use less power, and it doesn't need as much space as iOS 8 did. Just get it!

BY SUSIE OCHS

Should I upgrade to iOS 9?" is the question I hear the most around launches like this, even more than, "Should I buy a new iPhone?" People generally know if they want the new hardware, but whether or not to put a new OS on a device they already own seems like more of a gamble.

I'm here to tell you: iOS 9 is a pretty safe bet.

First of all, it runs on every device iOS 8 runs on, going all the way back to the iPhone 4s. (And when I *find* the iPhone 4s I bought back in 2011, and was in service as my husband's phone from 2012 through 2014, I'll thoroughly test it and let you know if iOS 9 is usable on the thing.) Since iOS 9 has been in beta, we've tested it on a few

devices, including an iPhone 5s, an iPhone 6, the third-gen iPad, an iPad Air, an iPad Air 2, and an iPad mini 3. The beta versions have been extremely stable, and none of the hardware we've used it on became sluggish or felt hampered by the new OS.

LESS SPACE REQUIRED

Last year, the upgrade to iOS 8 soured some iPhone users, who

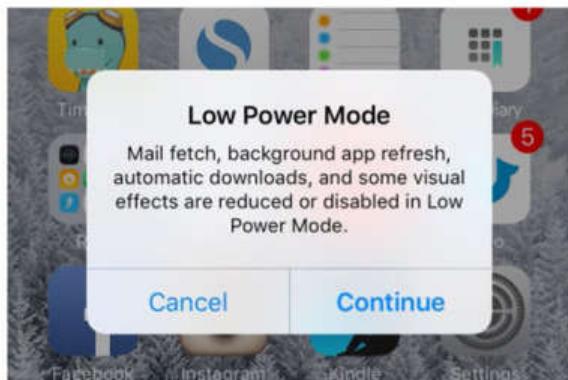


wanted to update over-the-air but didn't have enough free space. Well, that problem has been remedied—iOS 9 only needs 1.3GB of free space to install, compared to the whopping 4.58GB iOS 8 needed during an over-the-air installation. In fact, Apple even has a workaround called "automatic app deletions" that can temporarily trash your largest apps while *keeping your user data intact*, so when the update is done, the deleted apps will be automatically restored, with the correct data, just like you'd left it.

Plus, there was a snafu with a bad 8.0.1 update that was immediately rolled back to 8.0 and quickly replaced with 8.0.2. At the end of the day, the 8.0.1 update problem didn't affect that many users since Apple pulled it so fast. But if you're nervous, that's understandable, and the solution is simple: just wait a couple of days to see how it shakes out.

NEW METAL AND MORE POWER

What if you aren't interested in the new features like the revamped Spotlight screen (go.macworld.com/revampedspotlight), or the brand-new News app? What if you think all the handy little changes (go.macworld.com/ios9features) in iOS 9 aren't enough to get excited about? Or your iPad is too old to use the



new multitasking tricks (go.macworld.com/ios9multitask)? Apple made lots of improvements under the hood that should improve your experience even if you don't touch the new stuff.

All of Apple's own apps were rewritten with its Metal API, which takes better advantage of your iPhone's GPU for graphics and data processing. This should make your iPhone feel more responsive when performing the same old tasks.

Apple also made tweaks to affect battery life. Low Power Mode offers to kick in at 20 percent and again at 10 percent, and when you enable it, it can prolong your remaining battery life up to three hours. But you still get to use Wi-Fi, Bluetooth, location services, and all the other bells and whistles in iOS. Instead, iOS intelligently quits background processes like email fetch, dims the screen slightly and sets it to sleep much

DURING THE BETA PERIOD, Low Power Mode saved my bacon (and my ability to listen to music on the long commute home) so many times.

quicker, and reduces visual effects like parallax and app-opening animations.

I use Low Power Mode almost every day, and while the quick-sleeping screen can get kind of annoying, the benefit of having a functional iPhone is far worth that trade-off. It does slow down the processing speed, which can be noticeable depending on what you're doing, but it hasn't bothered me (although to be fair I've been using it on an iPhone 6). If you used to worry that upgrading your iOS would lead to worse battery life, iOS 9 should make that better too.

BOTTOM LINE

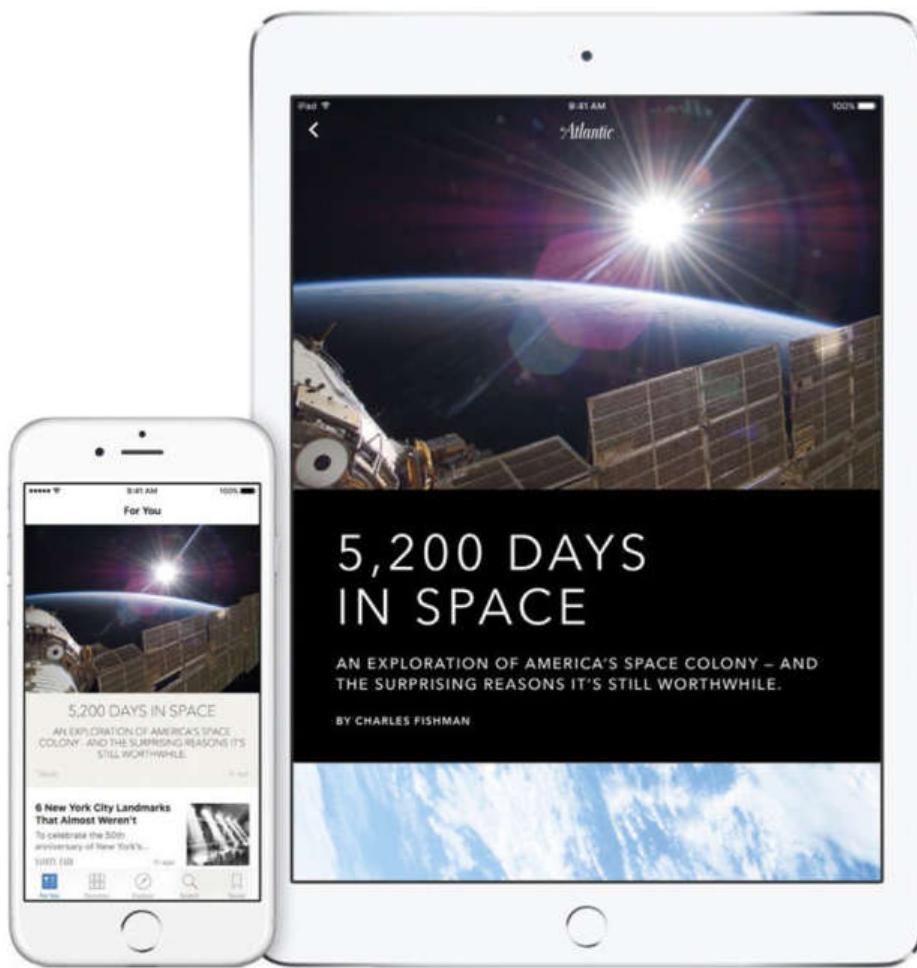
I still haven't mentioned security factors, like a longer default pass-code (now six digits instead of four), a streamlined two-factor authentication process, and the ability to block content in Safari with the help of third-party extensions. Apple puts a lot of emphasis on security, in part to differentiate itself from Google's MO of amassing tons of data on you for more targeted advertising. But the



upshot is a safer phone, and Apple's ability to roll out security updates directly to the entire iOS 9 user base at once is another plus.

So the bottom line is, you should update to iOS 9. It doesn't have to be today, and it doesn't have to be tomorrow. But iOS 9 is a speedy, stable release with a lot of handy new additions, and we at *Macworld* think it's a worthy upgrade. ■

SIRI SEARCH is improved.



How to get started with Apple News, iOS 9's Newsstand replacement

Looking for something to read? Apple is now delivering your daily news.

BY OSCAR RAYMUNDO

Like Facebook and Snapchat, Apple has partnered with news publishers to deliver a beautiful and fast-loading editorial experience on its home turf: iOS devices.

Apple News is a brand-new native app that officially launched with iOS 9 and replaces Newsstand. Similar to Flipboard, News uses RSS feeds to pull together stories from different publishers in a magazine-style layout. News, however, doesn't have Flipboard's built-in social capabilities, like incorporating a feed of just links shared by your Twitter network.

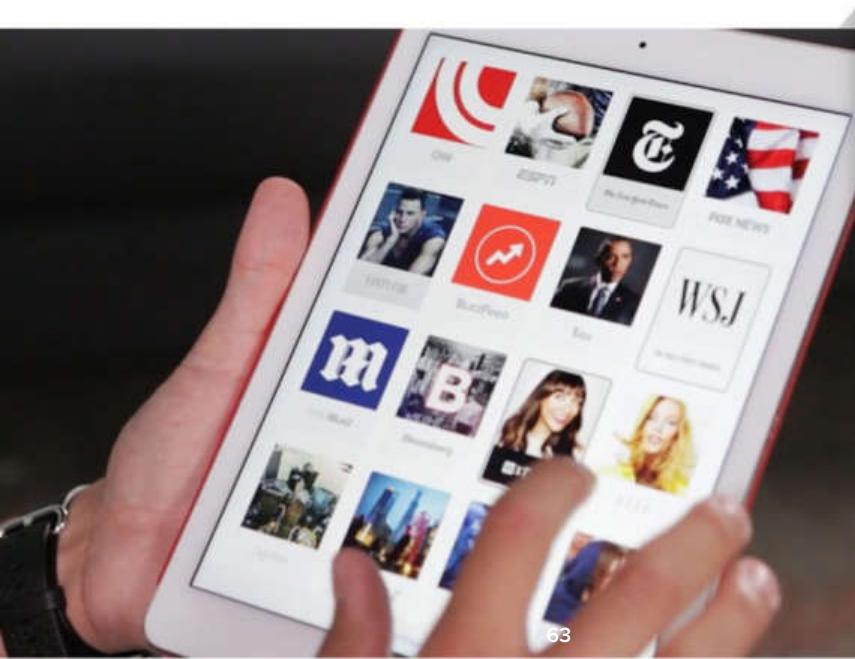
Previously, iOS devices had a Newsstand folder that served as a hub for newspaper and magazine

apps. Newsstand is gone in iOS 9—while all of your Newsstand apps are still there, and any newspaper or magazine subscriptions remain active, the apps are placed in a regular (read: "deleteable") folder instead.

Here's how to get started with Apple News after upgrading to iOS 9.

SELECT YOUR CHANNELS AND TOPICS

Open the News app and you'll be greeted with a welcome screen and

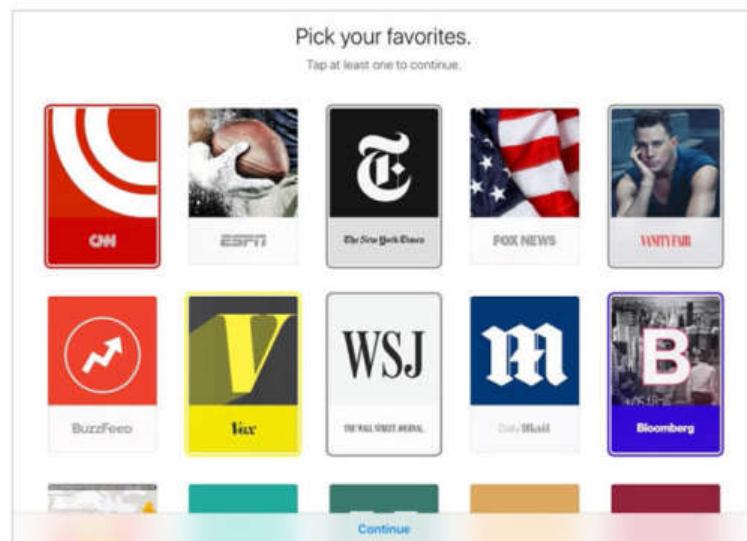


link to read a disclaimer about your privacy. (Apple News collects your information only to enhance your reading suggestions within the app, and Apple “understands that the articles you read are personal,” so your reading activity is not linked to other Apple services).

After you click “Get Started,” you will be asked to choose at least one channel (publisher) or topic to continue. We suggest selecting at least five to get a variety of articles and content. The channels that shot up near the top (CNN, *The New York Times*, BuzzFeed, etc.) were from publications that have signed up for Apple News Format, meaning their stories will have a custom layout and design.

Keep scrolling down to find more channels and topics. Topics tend to go from very general, like “Politics” and “Sports,” to highly specific, like the “Presidency of Bill Clinton” and just “Max Blumenthal,” so we’re certain you’ll be able to find something of interest.

You can edit or add more channels and topics later on, so don’t freak out if you forget to add a favorite at the start. After you select your favorites,



you’ll find a sign-up option to “Get News in Your Inbox.” We signed up for this when iOS 9 launched, but we haven’t received a News digest yet, so it must not be a daily newsletter.

SELECT YOUR favorite channels and topics.

BROWSE THROUGH YOUR CUSTOM MAGAZINE

News instantly generates a customized magazine using all the sources you selected, and you’ll find this by tapping on the For You tab. You will see stories from *The Wall Street Journal* and *Cosmo*, side by side and updated chronologically whenever one of your favorite channels posts a new article.

You can tap a story to read the full article, or tap and hold to pop the

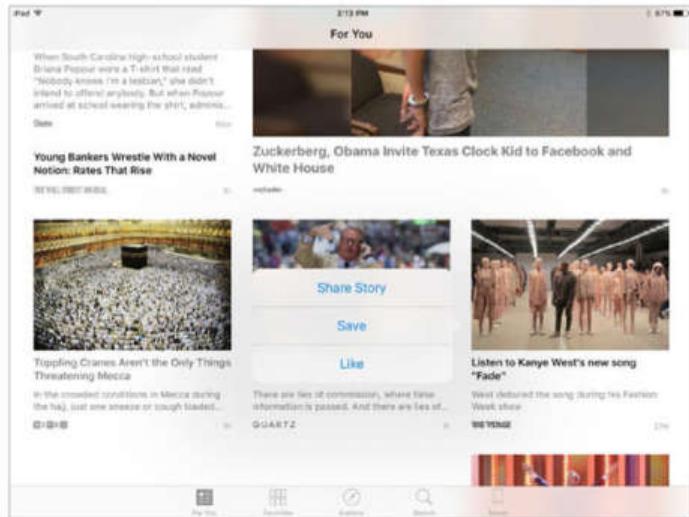
options to Share, Save, or Like a story directly from the homepage. (Because who actually needs to read a full article nowadays before sharing it on social media?)

Similar to how it works in Apple Music, the For You section in News “learns” from your preferences. “Like” a story on the homepage or by pressing the heart icon on the article page and News will know to surface similar suggestions. For You also sporadically shows a row of topics “you might like,” but these suggestions—Business, Politics, Entertainment, and Sports—didn’t seem specifically tailored to me.

FIND CHANNELS AND SAVE STORIES

In addition to For You, the News app has four other tabs on the bottom of the screen: Favorites, Explore, Search, and Saved.

The Favorites section is where you can view, manage, and edit the channels and topics you are subscribed to. Explore has a list of suggested channels and topics for you to consider adding. And if you can’t find your local newspaper or



favorite website, you can always Search for it. (It’s worth noting that if your favorite blog isn’t in Apple News, you can’t add its RSS feed on your own.)

(Here’s how you can add Macworld to your Apple News favorites (go.macworld.com/addmwnews), if you’re so inclined.)

Lastly, Saved is akin to the Reading List in Safari, a place where you can store all the articles you wish to read later. It also includes a History tab, which you can clear if you ever spend too much time reading *US Weekly*.

READ ARTICLES IN APPLE NEWS FORMAT

Apple claims to have recruited 50 publishers to be launch partners for

SIMILAR TO APPLE MUSIC, the For You section in News “learns” from your preferences.

News, including *Wired*, CNN, *The New York Times*, *The Atlantic*, ESPN, and Slate. These publishers worked directly with Apple to format a few feature stories in what Cupertino is calling “Apple News Format.” You can read full articles from all these publishing partners on Apple News, without ever visiting their own websites.

This new eye-popping format incorporates large images, video, slideshows, pop-up text, and other multimedia features. Apple News Format also has its own tagging and category system to surface similar reads once you reach the end of an article.

You can get a sense for how each publisher has played around with Apple News Format in the Apple News Updates channel (previously Apple News Selections), available in your Favorites tab. For example, *Wired*'s recent cover story with actress Rashida Jones is full of bells and whistles (slide-in text, video embed, etc.).

Not every story from an Apple News partner is as eye-popping, however. The rest of *Wired*'s stories follow a template. It's still custom to *Wired*—using the magazine's logo, font and iconography—but it's not as dynamic as its Rashida Jones “enhanced” cover story.

If you're reading a story from a



THIS IS WHAT the *Wired* cover story with Rashida Jones looks like on Apple's all-new News app.

publisher that has not partnered with Apple News, then the experience is more bare bones, very similar to any other RSS reader—you'll find the story's headline with a main image and a two-sentence description before it prompts you to read the rest of the article via a link to the publisher's website. Swipe up, and you're instantly taken to the publisher's website to read the entire article. Thankfully, most full articles load surprisingly fast, since they load right in the News app, instead of taking you out of the app and launching in Safari.

Even though Apple is using its iAd platform to sell ads on News, we didn't spot any advertisements at all. Publishers can bring their own ad partners and keep 100 percent of the revenue, too. It's been reported that several publishers like GQ have nabbed sponsorships just for Apple News content. ■

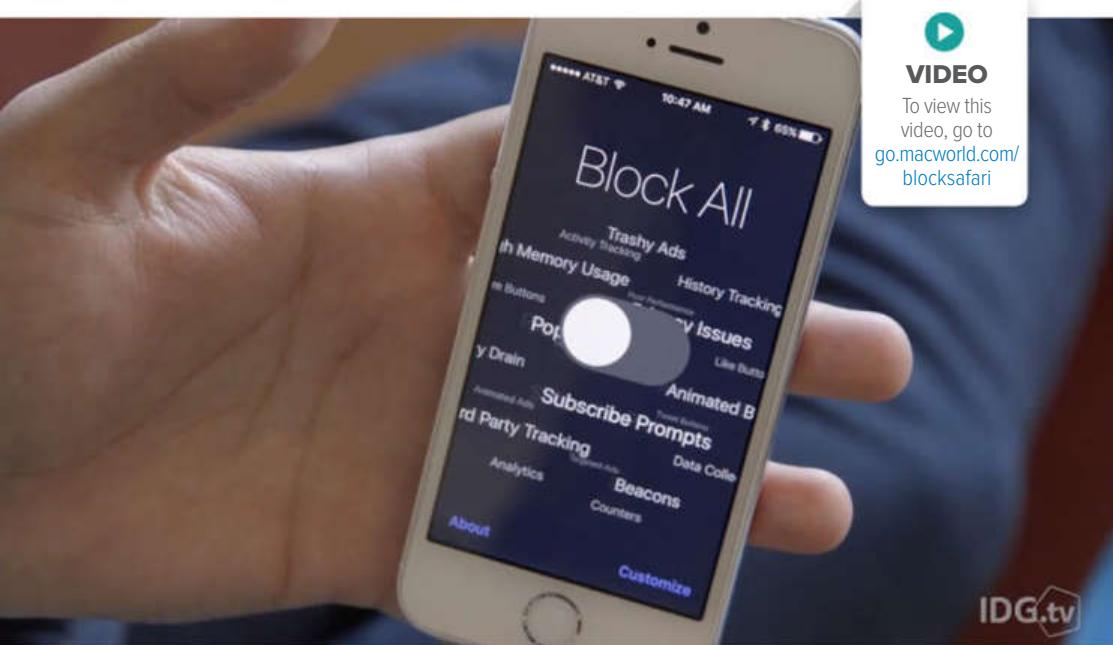
The screenshot shows a news article from a digital publication. At the top, there is a header bar with icons for signal strength, battery level, and time (12:58 PM). Below the header is the main title of the article: "FACEBOOK TRIES TO LURE JOURNALISTS AWAY FROM TWITTER". The title is displayed in a large, bold, black font. Underneath the title, there is a dark horizontal bar. The main body of the article begins with a paragraph of text. To the right of this text, there is a sidebar containing additional information or related content.

For journalists, tracking what's happening has in some ways never been easier. From Twitter to livestreams, 24-hour television news to text messages, we reporters—and everyone else—have access to more media to keep us informed than ever. But with so many ways to track stories today, there's also just so much more to track.

Facebook wants to help journalists find the signal in the noise. The company is hoping to make it easier for reporters to surface and follow news on Facebook and Instagram as well as track down users' reactions, photos, and videos related to news, sports, and entertainment. And now it's created a *free newsgathering tool* called Signal to help journos do just that.

"Social newsgathering has been happening for a while," says Andy Mitchell, the director of news and global media partnerships at the company. "Given the scale of Facebook, there clearly is a wealth of content available, so we wanted to build a tool to make it easier for journalists to discover new content that's shared."

Signal offers a dashboard where journalists can follow trending and emerging topics, track chatter around public figures on a leaderboard, and search to find public conversations, photos, or videos. Reporters can seek out stories and sources via hashtags or location on both Facebook and Facebook-owned Instagram. The com-



IDG.tv

Hands-on with content-blocking Safari extensions in iOS 9

iOS 9 brings Safari filters that can block ads, trackers, video, pop-ups, and more. Here's how to choose a content blocker and set it up.

BY GLENN FLEISHMAN

Call it anti-tracking and privacy software, bandwidth-reduction management, or ad blocking. By whatever name, it's popular in desktop operating systems like OS X and Windows. A study released midyear found nearly 50 percent of U.S. and 40 percent of routine online news-reading consumers employed blockers. With the release of iOS 9, these kinds of filters can be installed in Mobile Safari.

Content Blocking Safari Extensions, as Apple calls them, are filters created by third-party apps. The apps either include a prefabricated and updated list, or offer options to configure which kinds of content to block, including whitelisting and blacklisting sites.

The filters start with a URL pattern using standard "regexp" (regular expression) pattern, which can match an individual page on a site, every kind of page or media of a certain kind, or patterns across all sites. An optional media type can be noted, too, like a document or video. Before Safari loads a page or item referenced on a page, it matches against these URL patterns. If

there's a match, the entire page or item may be blocked, or just an associated browser cookie or page elements defined by style sheets. Filters can also block content referenced on a webpage that originates from a domain other than that of the webpage.

This allows a lot of customization. Entire sites can be fully unavailable—blacklisted from loading. Or all bandwidth-consuming media (audio, video, and other types) can be suppressed on low-bandwidth or high-cost connections. Every app is approaching this differently.

Let's roll up our sleeves and see what they can do.

1BLOCKER ALLOWS
users to configure sophisticated custom filters via its website, then transfer them to iOS.

The screenshot shows the Blocker app interface. On the left, under 'Packages', there is a 'Whitelist sites' section with a 'Add +' button. On the right, under 'Rules', there is a 'Macworld whitelist' rule configuration. The rule details are as follows:

- Action: Block content (selected)
- URL-filter: http://www.macworld.com/* (Case sensitive checked)
- Resource type: Document, Image, StyleSheet, Script, Font, Raw, SVG, Media, Popup (checkboxes)
- Load type: First-party, Third-party (checkboxes)
- Domains: All (dropdown menu)

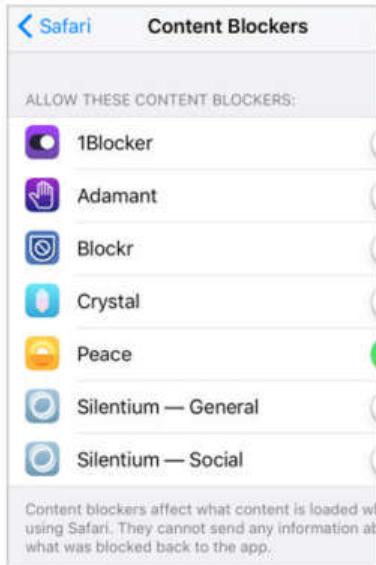
For the down-and-dirty details of how content-blocking extensions work, read “What lies beneath: What you need to know about content blockers in iOS 9 Safari”, *Macworld* October 2015, page 80 or the Apple WebKit team’s blog entry (go.mac-world.com/adblocker1stlook) with even more technical talk.

INSTALL AND MANAGE CONTENT BLOCKERS

Apple doesn’t include content-blocking extensions in iOS 9; it just lets them happen. They aren’t full-blown extensions, such as are available in desktop browsers like Safari. Those kinds of add-ons or plug-ins can add new ways to view media or control basic browser behavior. Instead, content-blocking extensions are a list of patterns and behaviors that a third-party app passes to Safari, which collects and compiles them from all enabled apps into a fast-loading filter set.

First, you need to get one or more apps. Since I’m writing this on iOS 9’s release day, only four content blockers are available right now.

(Note that not all iOS devices are supported that can run iOS 9: only those with 64-bit processors. This excludes the iPhone 4s, 5, and 5c; the iPad 2, 3rd-generation iPad, and 4th-generation iPad; 1st-generation iPad mini; and the 5th-generation iPod touch. All later devices work.)



CONTENT BLOCKERS are enabled via Settings → Safari → Content Blockers.

You can have any combination of content blockers enabled—or none—at any given time, so you don’t have to choose the perfect one. I expect there will be many kinds with distinct purposes. You may easily have two or three, or ones you turn on and off depending on where you’re browsing, your available bandwidth, and even the cost and amount of data transfers when you’re roaming off network or internationally.

Once you’ve installed one or more content blockers, you need to configure them if they offer configuration options. Launch the app to fiddle with settings, if any are available. Some apps will have no settings, but simply

incorporate a list that's updated remotely. Others will have huge numbers of options, down to letting you turn a filter on or off for particular sites.

Apple has a "firewall" of sorts in place: filters don't feed information back to apps. The filters are passed from an app to iOS, which compiles them and uses them with Safari. But Safari and iOS don't return that favor, as they don't tell apps what items were blocked. Some apps offer Share extensions that you can use within Safari that let you opt into passing some data back, like whitelisting a site you're on.

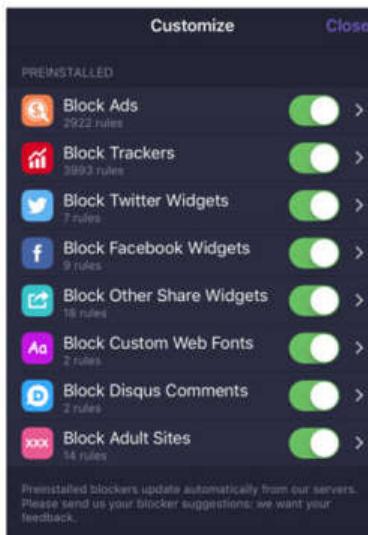
Finally, you have to enable filters individually for Safari. Tap Settings → Safari → Content Blockers, and you can flip a switch on or off for each installed extension. Whenever you do so, iOS quietly rebuilds the filters being applied—there's no extra step.

USE CONTENT BLOCKERS

Content blockers can take a lot of different paths:

Remotely updated list. Block only items in a list that aren't configurable. That's the approach of the Crystal app (crystalapp.co). The developer customized a set of tracking, advertising network, and other sites, and updates the list via the app. Adamant (cocoaapp.com/adamant) has a big on/off button, but it's essentially the same.

Simplified. This category offers



1BLOCKER EXPOSES
every site and pattern
it uses to block.

configuration options, but doesn't fully expose what's being blocked. The Purify app (purify-app.com) has an Ads And Tracking switch in its Preferences view, and additional options let you block images, scripts, and fonts—any or all of those. It also lets you whitelist sites. Blockr is similar, dividing categories into ads, media, and privacy, while Silentium (silentium.xyz) has slightly different divisions but includes region-specific ad blocking. Blockr (blockr-app.com) and Silentium can both also suppress those irritating European Union—required "cookie policy" messages.

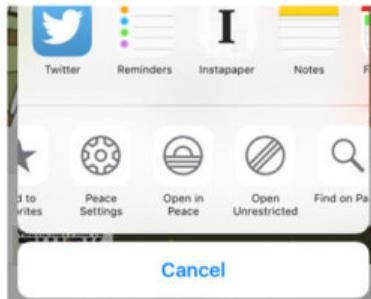
Complex and highly configurable. Apps like 1Blocker (1blocker.com) let you drill way, way down, seeing not

just every site or filter defined, but also the patterns used. It also lets you add rules for each kind of blocking: total, browser cookie, and page element (style sheet names, discussed next).

Another variable will be the source of block lists, whether it's for privacy, advertising network, anti-phishing protection, or bandwidth reduction. Crystal's developer adapted and reduced AdBlock Plus's EasyList (easylist.adblockplus.org).

Several apps I tested put items into the Share sheet for Safari, and use an embedded web view to load pages with different settings applied. The Safari View Controller is new in iOS 9, and is a full-featured embedded Safari browser that app developers can use—and which includes content-blocking filters—as opposed to the previous web views that were subsets of Safari's abilities. (Some apps like Tweetbot have already updated to adopt this new controller.)

Apple also built in a way to bypass all content filters, but only for a single page. After a page loads, press and hold down the refresh button. A pop-up or pop-over appears with Request Desktop Site, a previously available option hidden in a different place in Safari, and Reload Without Content Blockers. That reload only bypasses filters for the current page. The next tap loads using the filters.



CONTENT BLOCKERS can use Share extensions in Safari.

In testing, I looked at how rapidly pages were ready to use, rather than the complete load time. In many cases, because mobile versions of sites don't include auto-play video or are already optimized for smaller screens and less available bandwidth, the difference was minimal; in others, it could take twice as long, but still be just a matter of seconds.

For the most part, behind the scenes is where the real action is happening. Blocking known trackers prevents privacy leakages of your actions, including your path across different sites. Blocking advertising networks can dramatically reduce bandwidth consumed. At many sites, people are discovering, video loads in the background even when it never plays nor slows down the main page display. Some testers have found a 10MB to 15MB page load drops to 2MB to 3MB when content blocking is enabled, even when the loaded page shows omits one or two missing ads. ■

I was one of the **1** in **5**
Children in America who
STRUGGLE WITH HUNGER
join me and help put an
End to childhood hunger.

Viola Davis

HUNGER IS
ALL OF US



HELP UNDO CHILDHOOD HUNGER. GO TO HUNGERIS.ORG

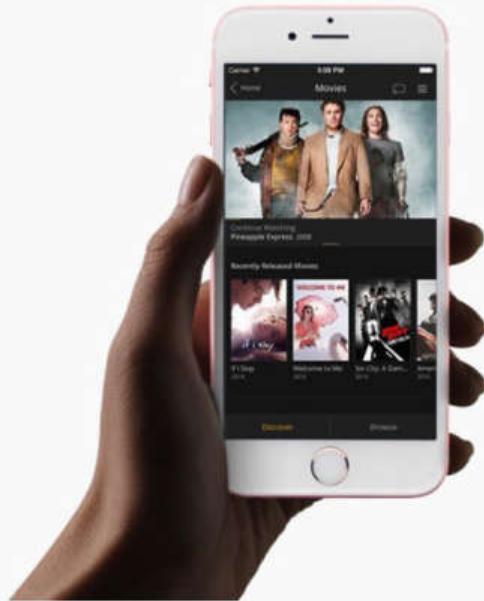
THE
SAFEWAY S.
FOUNDATION

The Hunger Is campaign is a collaboration between The Safeway Foundation and the Entertainment Industry Foundation to raise awareness and improve the health of hungry children.

EIF
ENTERTAINMENT
INDUSTRY FOUNDATION

Reviews

THE LATEST iOS PRODUCTS
REVIEWED & RATED



STREAMING MEDIA

PLEX 4.0: A ‘FREE’ PERSONAL MEDIA PLAYER WORTH PAYING FOR

BY J.R. BOOKWALTER

WHEN IT COMES TO media player apps, many stream content from the cloud, while others require users to transfer files directly to the device.

Plex (go.macworld.com/plex) is a different breed of player, one that creates a personal cloud securely hosted on a computer or network-attached storage (NAS) device at home. If you’re already converting discs into digital files, Plex organizes this media with beautiful artwork and metadata, then serves it up for playback from nearly anywhere.

PLEX 4.0



AT A GLANCE

Plex for iOS turns digital media into a secure personal cloud viewable from anywhere there’s an internet connection (or offline, with a paid subscription).

PROS

- Streamlined UI with mini-player
- Free with device playback limitations
- Improved Mobile Sync

CONS

- Plex Pass subscription required for premium features
- Limited functionality without paid activation
- Requires free Plex Media Server

PRICE

Free

COMPANY

Plex

YOU'VE BEEN SERVED

By itself, Plex for iOS doesn't do a whole lot aside from casting the contents of your Camera Roll to other client apps on Android smartphones and tablets, Roku, Amazon Fire TV, game consoles, or late-model smart TVs. There's also no way to directly sideload content like other media player apps.

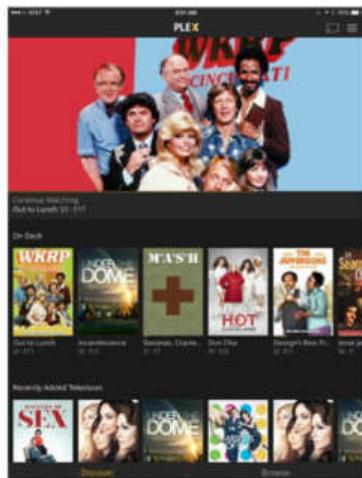
Instead, the universal app requires free Plex Media Server software running on the Mac, Windows PC, or Linux PC where content is stored, or a NAS from one of nine different manufacturers including Synology and WD. (You can also mix-and-match—I use a NAS mounted on a vintage mid-2007 Mac mini, for example.) Once installed, the server can be managed from any web browser, where users set up libraries for Movies, TV Shows, Music, Photos, or Home Videos.

This process is as simple as pointing the server to where local media

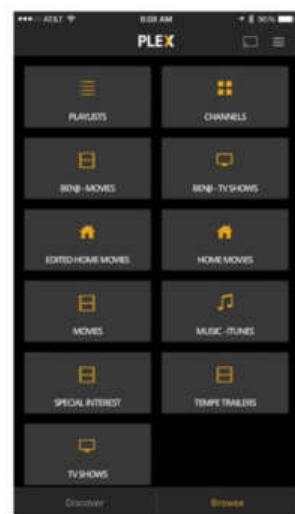
files are stored, although there are plenty of settings available for advanced users to tinker with. The software automatically indexes and organizes content in the background, downloading relevant artwork and metadata from a variety of internet sources. (Worth noting: DRM-protected content and disc images/folders are not supported.)

Plex secures all communication using SSL certificates and encryption; remote connections are streamed through your home broadband connection, but can be converted on-the-fly to conserve bandwidth. The server also keeps track of what you've been watching, making it easy to resume or dive into the next episode of a TV series.

PLEX 4 OFFERS a cleaner user interface, with content currently being watched or content recently added brought front and center in the new Discover tab.



MEDIA LIBRARIES ARE now centrally located in the Browse tab with Plex 4 for iOS.





PAY TO PLAY

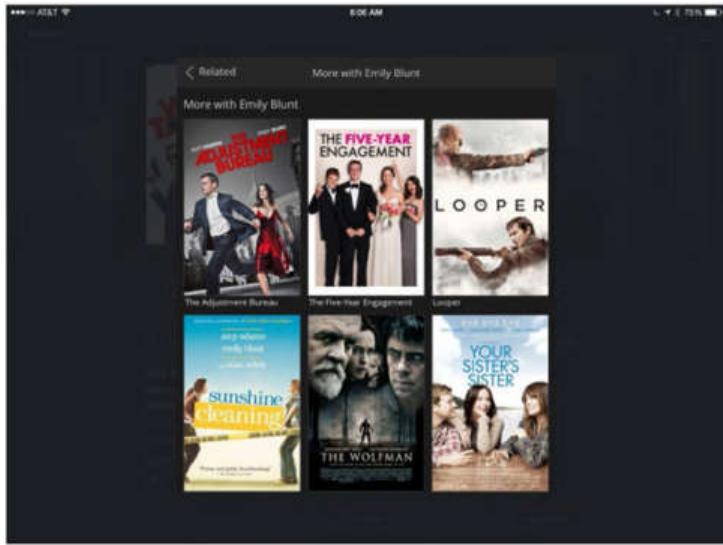
There's never been a better time to try Plex for iOS since the app is now free. However, in this case, *free* is really more like a feature-limited trial, since full access to the core functionality requires a \$5 in-app activation. (That fee doesn't apply for those who own a previous version.)

The free version allows casting from your Media Server to other Plex apps, but limits same-device video and music playback to only a minute. It's a fair compromise considering the amount of back-end work required to maintain the ecosystem, but the absolute best experience comes with a subscription.

Available in monthly (\$5), annual (\$40), or lifetime (\$150) flavors, Plex Pass is completely optional, but adds a ton of premium benefits including managed accounts for other members of the household (great for keeping kid's shows out of your queue), offline sync for mobile devices, the ability to wirelessly upload camera content, and free access to all apps, including early releases.

The makers of Plex aren't exactly pocketing all the activation and subscription income—some of that money now goes to metadata

A REDESIGNED PLAYER view appears when you tap the screen while watching for complete control over content.



RELATED CONTENT OFFERS
up other titles in your library from the same genre, director, and cast.

providers like Rotten Tomatoes, whose movie ratings (and soon, full reviews) are now displayed in the iOS app. Plex Pass subscribers can also generate automatic music playlists using Gracenote metadata, along with access to movie trailers and more than 140,000 music videos from VEVO.

DISCOVER AND BROWSE

In recent months, Plex has been preoccupied updating other apps with improved browsing and discovery, often at the expense of the iOS version. I'm happy to say this situation has been fully rectified with the latest release, which offers new features like a mini-player that allows viewers to browse other content while the current video continues playing in a small window, similar to the YouTube app.

With the 4.0.1 update, Plex also splits the iOS home screen into separate Discover and Browse tabs for faster access to recent content. The former contains the same On Deck, Recently Added, and related categories, along with a large Continue Watching banner across the top for picking up where you left off.

Other categories like libraries, Playlists, and Channels (plug-ins added

from the web app that deliver free streams from web providers like Apple Movie Trailers) can now be found consolidated into the Browse tab instead. Individual movies feature a new option to display related titles from your library, along with easy access to other content from the same genre, director, or stars.

Plex 4 also parses chapter information from videos, making it easier to jump to specific scenes, and finally speeds up the process of syncing content (including entire playlists) to mobile devices for offline playback. Last but not least, you can now view or listen to partially synced files—no more leaving home with useless half-downloaded content.

BOTTOM LINE

Assuming you already make digital versions of packaged media or want to be able to view personal media from anywhere without storing it in the cloud, it doesn't get any better than Plex for iOS. It's worth \$5 to unlock core features, but the absolute best experience comes with a premium subscription. ■



PLEX 4 INCLUDES a mini-player for browsing new content while you're in the middle of a playing video.



UTILITY SOFTWARE

DISPOSABLE PHONE NUMBERS FOR MAXIMUM PRIVACY

BY J.R. BOOKWALTER

Whether it's a blind date you're meeting for the first time or a listing on Craigslist, we've all experienced trepidation about handing out private phone numbers to just anyone. There's now a better way to maintain anonymity by using temporary digits for sending or receiving calls, texts, and picture messages on your iPhone.

THE OTHER NUMBER

Burner (burnerapp.com) handles this conundrum with grace and style, putting multiple short-term phone numbers at your disposal for any occasion, each of which can be nuked with the tap of a button. Signup is quick and painless, although you are required to share your real iPhone number with the developer, which then becomes your account number.

Although the app is free with a seven-day trial, additional burners

BURNER



AT A GLANCE

Burner is your “other” number—your work number, Craigslist number, Etsy number or dating number—the one to give out when you need to be in touch, but don’t want to stay connected forever.

PROS

- Disposable phone numbers for all occasions
- Incoming or outgoing calls, texts, and picture messages
- Auto-reply for texts

CONS

- In-app credits expensive for continued use
- Occasional issue with “bad” phone number assignments
- MMS messaging limited to single package

PRICE

Free with a 7-day trial; additional burners start at \$2

COMPANY

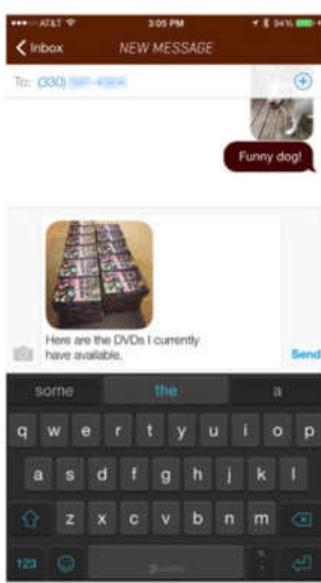
Ad Hoc Labs

require credits, which can be purchased in the app starting at \$2. Credits are used to buy packages ranging from 60 texts plus 20 talk minutes for 14 days, up to an unlimited 30-day burner; only the Picture Burner option includes MMS messaging.

It's important to note when a burner expires, any history and unused minutes/texts also go up in flames—there's no undo option available. Users can also choose to extend the life of a burner for 90 days at a time, topping off available minutes and texts in the process, although this gets expensive for long-term use.

Burner uses actual cellular minutes for phone calls, so it can't be used on an iPad or iPod touch, and it currently works only in the U.S. (except for Puerto Rico) and Canada. You create new "burners" by entering a custom name and desired area code, which doesn't have to

match your current location. One of several test burners I set up couldn't be used at all, which the developer attributed to a rare issue with the numbers assigned by an outside provider (credit refunds are issued in such cases).



WITH CERTAIN IN-APP packages, Burner can send MMS picture messages, a feat not even Google Voice can accomplish.



EACH BURNER SHOWS the number of remaining calls or texts, along with an option to destroy it prematurely or extend it beyond the time limit.

PRIVACY ASSURED

Multiple burners can be managed by horizontally swiping between numbers, or you can display all recent activity from a single page. Each burner offers default or custom voicemail greetings, along with color coding to help identify which one is currently in use. The latest update adds a handy autoreply option for text messages, Burner's take on email

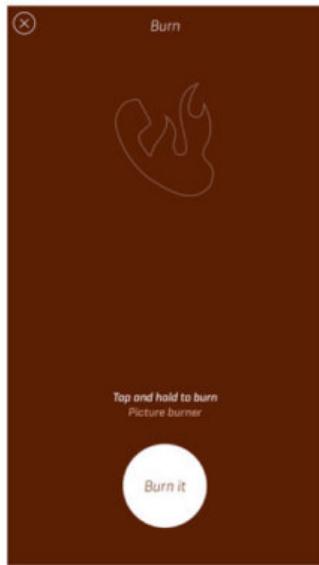
vacation mode.

Calls, texts, and picture messages are all confined to Burner—for outgoing calls, confidentiality is maintained by first dialing the temporary number, then connecting the number being called. Users are alerted to incoming calls via push notification; after answering, you'll have the option to accept or decline the call with the press of a button.

Speaking of privacy, the entire app can be hidden from prying eyes by setting up a four-digit PIN code and optionally Touch ID on late-model iPhones. One thing I particularly liked was the option to temporarily unlock Burner for certain lengths of time—minutes, hours, or the rest of the day—when you're frequently using the app.

BOTTOM LINE

Burner isn't the most affordable way to maintain alternate numbers on your iPhone, but it's definitely one of the most convenient, with a slick UI and loads of delightful conveniences like voicemail, Touch ID, and autoreply. ■



IF THINGS GO awry with one of your burner numbers, nuking it out of existence is only a tap away.



STREAMING SERVICES

JUSTWATCH: TV GUIDE FOR ALL OF YOUR STREAMING SERVICES

BY J.R. BOOKWALTER

Although my family currently subscribes to cable (a bargain at only \$10 per month more than high-speed internet alone!), we count ourselves as “cord-cutters” since the majority of our viewing is streamed from services like Hulu. I’ve also largely abandoned collecting physical media in favor of movie and TV show purchases from Vudu, iTunes, or Amazon Instant Video.

With so many services in play, keeping up with which titles are available where and for how much becomes something of a juggling act—not to mention content vanishes from services like Netflix when the rights lapse, or hits the digital bargain bin shortly after you just paid full price for it.

JUSTWATCH



AT A GLANCE

JustWatch is the easiest way to browse through your favorite movies or TV shows to see if they are available at any streaming providers.

PROS

- Streaming search engine for cord-cutters
- Universal wishlist
- Price drops tab for bargain hunters

CONS

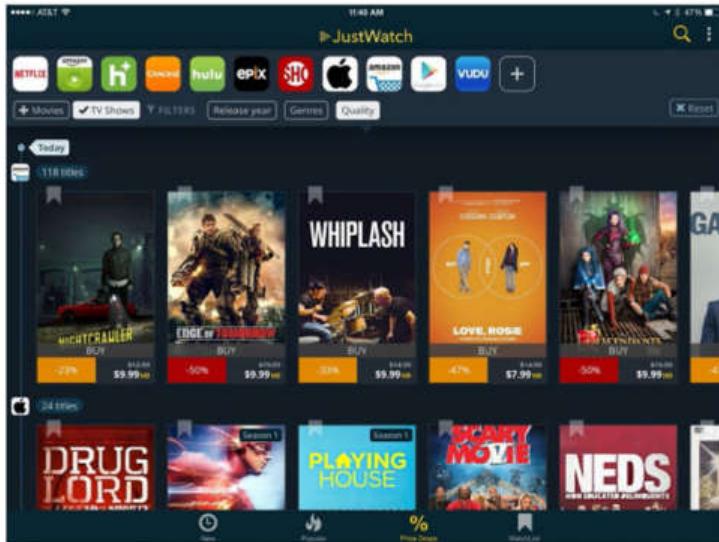
- No iCloud or account sync for Wishlist
- Lacks push notifications for relevant price changes
- No historical tracking of pricing data

PRICE

Free

COMPANY

Moviecycle GmbH



JUSTWATCH IS GREAT

for keeping tabs on which streaming provider has the cheapest prices on your favorite titles.

WHAT'S ON?

JustWatch (justwatch.com) tames the streaming madness with a search engine designed to find legally available content from today's most popular services. In addition to the aforementioned, the app offers HBO Now, Showtime, Epix, Crackle, XBox, PlayStation, and a trio of smaller U.S. providers. (Similar listings for Australia, Brazil, Germany, and New Zealand are also included.)

At first launch, users select favorite providers so you'll only see results from the places you shop or have subscriptions with; you'll still see all available services on individual detail pages, however. Tabs across the bottom sort content by what's new, most popular, recent price drops, and your personal wishlist.

From the first three tabs, you can filter by movies, TV shows, or a host of other criteria such as picture quality (SD or HD), year of release, or genre. A magnifying glass button in the top right can be used for specific searches by title, cast, or crew name. Tap a result to view the list of services where your selection is streaming or available to rent/own, along with synopsis and photos (but oddly, no cast and crew details).

JustWatch can't be used to watch full movies or episodes, but indi-

vidual listings include YouTube links to relevant trailers or featurettes, where applicable. The app uses authentic brand icons—tap one and you'll be sent straight to that provider's purchase page in Safari, while most subscription-based services open directly in the respective app for immediate viewing.

BARGAIN HUNTER

One of the JustWatch features with a lot of potential is the ability to create a universal wishlist for movies and TV shows you're thinking about purchasing. From any detail page, tap the Add To Wishlist button and that title will be moved to the top of the Wishlist tab, where you can see the number of services offering it.

This option can be a little deceptive, however: Sorting by Best Price almost always shows the standard-definition version first, which is typically cheaper than HD. I'd prefer an across the board preference setting to only display HD content (my preferred choice) unless SD is the only available option, but for now the selected quality is maintained across subsequent searches.

The other thing missing is a tracking feature to display historical data views as prices drop or increase over time. Push notifications would also be welcome to alert users when the price of a Watchlist title goes up or down when the app isn't open.

Those quibbles aside, JustWatch does offer native support for iPad and iPhone 6 screens, along with high-resolution artwork that looks great on Retina displays. Unfortunately, there's no iCloud sync or account login, so Wishlist data stored in one place doesn't show up on other devices or the web edition.

BOTTOM LINE

JustWatch turned out to be just perfect for quickly finding where movies and TV shows can be streamed, rented, or purchased online, but here's hoping Watchlist will become more useful in future updates. ■



AFTER SEARCHING FOR a title in JustWatch, you'll see at a glance where it's available to stream, rent, or purchase—it's only a tap away.



PHOTOGRAPHY SOFTWARE

ORGANIZER: INCORRECT PHOTO METADATA MEETS ITS MATCH

BY J.R. BOOKWALTER

iCLOUD PHOTO LIBRARY answered my mobile photo prayers—until I realized there was no way to adjust date, time, or geolocation data from iOS. This meant my Canon T3i photos shot alongside the iPhone would be out of order in the Moments view if I forgot to adjust the time after the switch to daylight saving, triggering my obsessive-compulsive tendencies in the worst possible way.

GET ORGANIZED

At first glance, an app with a generic name like Organizer (go.macworld.com/organizer) might not sound like the remedy to such first-world problems, but it wound up being the cure for what ailed me. Much to my surprise, developer Genady Okrain gives away this excellent software free of charge. (And does so with grace: There are no ads, but an unobtrusive, in-app “tip jar” is available for those compelled to support such fine work.)

Although rival apps can adjust metadata, they do so only on a copy of the image, leaving unwanted duplicates. This outdated method is no longer acceptable in an era where users can finally edit photos on one

ORGANIZER



AT A GLANCE

Since iOS 8, photos are ordered automatically with location, date, and time, but what about saved photos not from the stock Camera app? This is the only app available that lets you manually adjust location, date, and time of photos in your iCloud Photo Library.

PROS

- Directly adjust date, time, and location metadata of original photos
- Clean, Photos-style user interface
- Make adjustments to multiple images at once

CONS

- No native iPad support
- No batch reset of original date and time
- Lacks extension support for direct edits from Photos app

PRICE

Free

DEVELOPER

Genady Okrain



ORGANIZER ALSO OFFERS A PEEK at all of the metadata which lurks hidden in your photos or videos.



ORGANIZER MAKES IT EASY to adjust date, time, or location data on one or more photos from the iPhone.

device and have changes sync seamlessly across everywhere else within seconds. Organizer works directly on files, and is the only app I've come across to fully embrace iCloud Photo Library adjustments this way.

At launch, Organizer presents a list of everything in your photo library, including available photo albums. The app ignores iCloud Photo Sharing content, but the trade-off is a less cluttered user interface. Scrolling through my 17,000-plus image library was on a par with Photos, and aside from the magenta text, this feels very much like an Apple product.

MAKING ADJUSTMENTS

To make changes, select one or more photos or videos—that's right, you can adjust the time, date, or location on multiple images at once, and even copy metadata conveniently from one to another. There's also a view option, which displays extensive details about an image that

Photos could only dream of.

Date, time, and time zone data for one or more photos can be adjusted independently from a unified screen—similar to how it works with Photos on OS X Yosemite—but Organizer goes a step further by allowing individual files to be reset back to the original date and time.

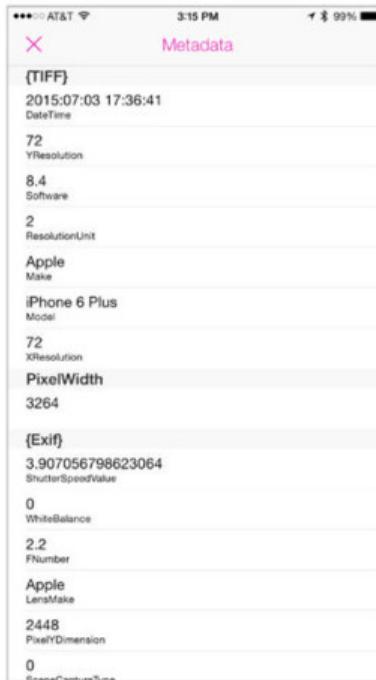
The app can also search for and adjust location data, an option arriving with OS X El Capitan this fall, but this is still your best bet for iOS 8 and later.

Organizer may not be something you'll use every day, but it's a godsend for those who import scanned photos into iCloud Photo Library or occasionally shoot iPhone

photos in tandem with a DSLR and want to keep everything in the proper order. It's a bummer the app isn't a universal build with native iPad support (and making Organizer available as an extension from Photos also ranks high on my wish list), but otherwise this is an indispensable tool for taming your cloud-based digital photo library.

BOTTOM LINE

Organizer fills a gaping hole in Apple's iCloud Photo Library strategy without having to spend a dime while helping keep image metadata—and OCD—in check. ■



ORGANIZER OFFERS A clean, Apple-style user interface for tweaking metadata on all photos or just those in certain albums.

What's new at the App Store



WORK HARD ANYWHERE

WHA (workhardanywhere.com) by Work Hard Anywhere is designed with freelancers in mind, identifying locations where they can find a strong Wi-Fi signal and get to work. Everybody contributes: Users can rate the Internet speed, the work space size, and more of their favorite local hangouts.

OneRx



OneRx (onerx.com) helps you get the cheapest possible version of your prescription drug. Enter your drug in the app and choose a nearby pharmacy, and then the app will compare prices for you while adding in deductions for insurance and coupons. Just show the app to your pharmacist when you pick up the prescription to claim your savings.

Ballpoint



Ballpoint (go.macworld.com/ballpoint) is a \$1 app for iOS that lets you create “precision art,” either by freeform drawing or by importing and adapting images from your photo library. It offers a 4096-by-4096 pixel canvas, and the color palette holds 24 colors at once.

Genius Sign



The \$1 Genius Sign (thegrizzlylabs.com/genius-sign) bills itself as “the best app to sign, date and annotate your documents.” Docs in the app can be found in Spotlight, and users can “benefit from your large iPad screen with Split View. Genius Sign will gracefully resize as needed.”

Sleep++



Sleep++ (go.macworld.com/sleepplus) is a new sleep-monitoring app for the Apple Watch: Wear your watch while you sleep, activate the app when you start to sleep, then let it know when you’ve woken up. The app then gives you a breakdown on your other app-equipped iOS devices of how well you slept and when you were restless, letting you fine-tune your sleep.—JOEL MATHIS

Meet the \$16,000 solid-gold iPhone 6s case

This month's roundup of new iPhone cases features a case made truly just for the rich and famous. Plus ultra-sturdy rugged cases for hardworking phones.

BY MARCO TABINI & EMANUELA CORSO

GOLDGENIE

If you are looking for a higher degree of luxury (or just happen to have money burning a hole in your pocket), the Gold iPhone (iPhone 6s and 6s Plus; \$4,045 to \$16,200; goldgenie.com) may be for you.

It's an actual iPhone adorned with 24k gold, rose gold, or platinum.

Because it's a real iPhone, you can pick between a 16GB, 64GB, or 128GB version—all unlocked, so it will work with any carrier. If 24k gold isn't enough for you, you can pick a different style, ranging from the basic "gold elite" to fancy croc-leather patterns and even diamond-studded themes. Each iPhone comes with protective armor, too.



PROPORTA

The Dual Shield (iPhone 6/6s; \$27; proporta.com) combines a sturdy exterior with a rubber lining to keep your iPhone free of scratches and smudges. The case has been tested to meet or exceed military drop standards, sports an anti-bacterial coating, and comes with a handy screen protector. The Dual Shield is available in combinations of white/gray or black/gray.

New iPhone cases



GRIFFIN

The recently released Survivor Summit (iPhone 6/6s; \$50; griffintechnology.com) sports a sturdy polycarbonate and silicone shell designed to withstand the harshest conditions. The case has been designed to prevent damage from water, dust, and dirt, and to absorb and dissipate impact from shocks and falls—and it passed all of Griffin's tests under those conditions. The Survivor Summit comes with a Touch ID-compatible screen protector and is available in black, clear/black, dark pink/dark gray, or dark blue/black.

PUREGEAR

The Tempered Glass with Smart + Buttons (iPhone 6/6s and 6 Plus/6s Plus; \$40; pure-gear.com) is a screen protector that not only keeps your screen free of smudges and scratches, but it also adds invisible shortcut buttons that allow you to quickly launch your favorite apps. Just position your most-used apps in the bottom corners of your dock and the top corners of your home screen, and you'll be able to feel where these apps are thanks to the tactile buttons. Designed to work seamlessly with the iPhone's display, the screen protector offers maximum clarity for a blurry-free experience, and is easy to install thanks to PureGear's included "self aligning" tray.





CALYPSOCRYSTAL

If you like to make a statement, the CalypsoCase Cabrio (iPhone 6/6s and 6 Plus/6s Plus; \$169; calypsocrystal.com) offers a luxurious look in four different patterned colors. Handcrafted with premium materials (including Italian leather), each Cabrio is a one-of-a-kind product labeled with its own serial number and is accompanied by a signed certificate of authenticity. The case comes in four themes—Zurich Night, Paris Glory, Sidney Morning, or Atlanta Mist.

SPYDER

When looking for extended battery life without the extra bulk, the PowerShadow (iPhone 6; \$99; spyderstyle.com) packs a 2750 mAh power pack that doubles your surfing and talking time. Available in black, titanium, champagne, or white, this Apple-certified case keeps dust and water away, sports an anti-microbial treatment, and comes with an optional charging dock for quick top-ups.



iPhone 6s and 6s Plus Review:

THE BEST iPhone EVER, BY A WIDE MARGIN

The iPhone 6s features internal improvements and interface enhancements that set a new benchmark for smartphone excellence. **BY JASON SNELL**



“ **T**he only thing that's changed is everything,” says the slogan Apple

unveiled along side the iPhone 6s and iPhone 6s Plus (apple.com/iphone6s). It's an attempt to address the perception that the odd-year “s” updates to the iPhone line are minimal and uninteresting.

Yes, the “s” models look more or less like their predecessors, but for quite a while Apple has used these cycles to upgrade a lot of the stuff on the inside. This year is no different: The iPhone 6s and 6s Plus offer some major improvements, with better cameras (front and back), much faster processors, more responsive Touch ID, and the single biggest improvement to the iPhone's user interface in its history.

But other than that, y'know, no big deal.



16GB iPhone 6s and 6s Plus



64GB iPhone 6s and 6s Plus



128GB iPhone 6s and 6s Plus



SAME STYLE, DIFFERENT MEASUREMENTS

Let's start with the part of the iPhone that doesn't change on "s" models: The outside. While Apple's new 2015 phones seem indistinguishable from last year's models, if you check carefully you'll discover they're slightly larger and heavier.

Both iPhone 6s models are fractions of a millimeter wider, longer, and thicker than their iPhone 6 equivalents. I absolutely couldn't tell the difference, and the Apple leather case I've been using on my iPhone 6 for the last year slipped onto the 6s without any trouble. (Extremely tight, precisely

made cases might have trouble fitting the new models, but I'd wager that most cases won't have any trouble being repurposed for a newer model.)

The change in weight, on the other hand—which appears to be related to the addition of 3D Touch sensors under the display, and possibly the new Taptic Engine—well, that's noticeable. The iPhone 6s and iPhone 6s Plus both feel denser than the iPhone 6 models. The difference is less than an ounce, and it's less than the weight of my Apple leather case, but it's there. Just like getting used to the extra weight of a case, after a day or two you probably won't notice the difference. But it is percep-



TOP 3 NEW FEATURES OF THE iPhone 6s



VIDEO

To view this video,
go to [go.
macworld.com/
iphone6bestvid](http://macworld.com/iphone6bestvid)

tible in a way that the changes in the iPhone 6s's dimensions aren't.

One of my least favorite things about the iPhone 6 design is that it feels a bit slippery, like a bar of soap. I never used to put cases on my iPhones, but my iPhone 6 has been in a case for the past year. Early reports suggested that the metal surface of iPhone 6s models, which use the stronger 7000-series aluminum Apple also uses in the Apple Watch Sport, was somehow more tacky or "grippable" than the older phones. When I asked Apple about this, they declined to say anything, and if I'm reading between the lines I think the suggestion there is that Apple doesn't think there's any difference.

Yet, I've seen people online who are convinced that their iPhone 6s units are less slick than their old phones. I've handled a bunch of iPhone 6s models now, and one of them—a 6s in the new Rose Gold color variant, which is pleasantly pink—did indeed feel noticeably tackier to the touch. But I've got a silver 6s Plus and a space gray 6s here that feel exactly as slick as last year's models. It's not the colors themselves—I heard from someone who is convinced their space gray 6s isn't as slippery.

What's happening here? Part of it could be a placebo effect, but my guess is that some change in Apple's production process—either



iPhone 6s Plus (left) and the iPhone 6s (right).

the manufacture of the aluminum itself or, more likely, the anodization process that each aluminum backplate undergoes—has introduced some variation in the texture of the iPhone's surface. So if you buy an iPhone 6s, might it be a little bit easier to grip than the iPhone 6? It's possible, but I sure wouldn't count on it.

A TOUCH SCREEN WITH DIMENSION

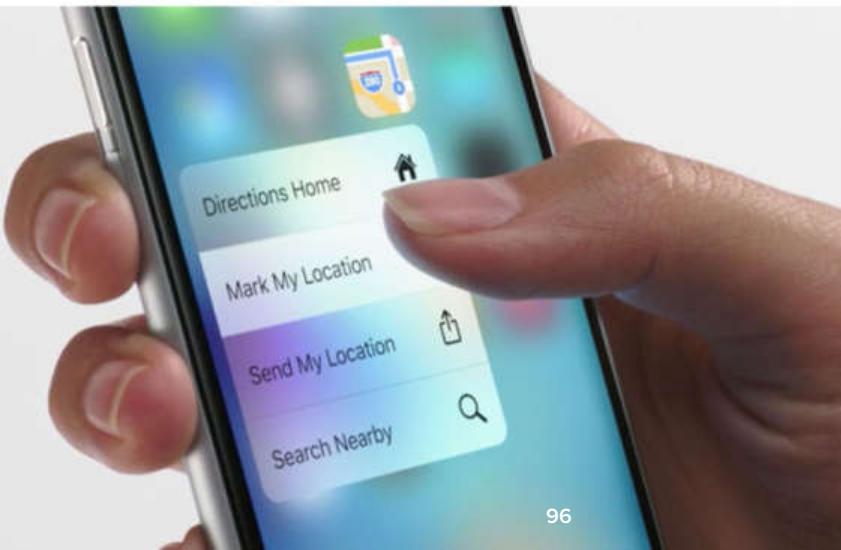
The banner feature of the iPhone 6s and iPhone 6s Plus has got to be 3D Touch (go.macworld.com/3dtouch), which allows the iPhone to sense how much pressure you're putting on its screen, and react to that in some interesting ways.

If you're on the home screen and push a little extra harder on an app icon, you'll usually (apps have to be updated to support this feature) see a menu of up to four Quick Actions. As the menu pops up, you'll also feel a slight vibration coming from the phone's Taptic Engine, which can create much more subtle vibration patterns than previous iPhones. In fact, if you push on an app that doesn't offer Quick Actions, you'll feel

a longer triple-vibration pattern that indicates that there's nothing to see.

Apple has done a great job integrating haptic feedback into 3D Touch, and the combination of your own sense of pressure on your fingertips and the vibration of the Taptic Engine is greater than the sum of its parts. Because the vibrations provide instant feedback about how hard to push in order to trigger 3D Touch, I never really had a problem triggering the feature accidentally.

The items in Quick Actions menus are essentially links to different features or areas of the app whose icon you're touching, allowing you to open the app and jump quickly to a specific area. For example, rather than opening the Camera app, tapping the icon to switch from the iSight camera



PERFORM A 3D TOUCH on an app icon and a pop-up menu appears with tasks you can perform.

to the FaceTime camera, and potentially swiping to get the app into Photo mode, you can just choose Take Selfie from the Quick Action menu. The Camera app opens, automatically switches to Photo mode, and changes to the FaceTime camera.

When you are using an app, developers can choose how to use 3D Touch, if at all. Apple has provided the tools for developers to support a convention that it's using in most of its own apps, which it calls "peek and pop." When you provide a little bit of pressure on an on-screen item that's concealing more information—this could be an icon representing a friend, a message in a Mail or Messages list, or a webpage link—the Taptic Engine provides a small vibration as a floating window pops up with a preview of the underlying information. If the item doesn't interest you, you can remove your finger from the glass and the window goes away. If you want to know more, you can press a little bit harder and you'll get a stronger vibration as the window "pops" open, just as if you had tapped on it to begin with.

It's a nice feature, a little bit like Quick Look on the Mac. What makes it a bit more intriguing is that you can perform actions right from within the "peek" itself. For example, in Mail I can drag a "peek" to the right to mark a message as unread, or drag it left to archive it. If I drag the "peek"



APP DEVELOPERS CAN DECIDE IF THEY WANT TO IMPLEMENT "PEEK AND POP" OR BUILD THEIR OWN WAYS OF REACTING TO 3D TOUCH.

up, I get a menu that lets me choose to reply, forward, move, mark, or set a notification on that message. In Messages, dragging up on a "peek" brings up a list of auto-reply messages, so I can quickly answer a text.

App developers can decide if they want to implement "peek and pop" or build their own ways of reacting to 3D Touch. In Apple's own Notes app, for example, when you're in drawing mode the app detects the pressure of your finger on the screen and uses it to determine the intensity of the pencil

marks. And game developers will undoubtedly find numerous ways to use pressure sensitivity to their advantage.

I'm a believer in 3D Touch—it provides a fantastic collection of power-user features, but feels natural enough that I think it'll be adopted by more than just the nerdiest among us. My only real complaint is that some of the gestures while in "peek" mode are hard to do with my usual hand grip. A few times I found myself wanting to swipe on an email to archive it, only to realize my finger just couldn't move any farther in that direction. And while I could use the nifty new 3D Touch shortcut to switch to the previous app by 3D Touching the left edge of the screen and swiping all the way to the right, on the iPhone 6s Plus my little thumb couldn't complete the gesture because it couldn't reach the other side of the screen. Maybe this is a sign to stick with the iPhone 6s and not move to the larger iPhone 6s Plus.

One final complaint, of a sort, about 3D Touch: After a few days of using it, I want it everywhere—and it's not. I can flip up Control Center from the bottom of the screen to quickly open the Camera app, but for some reason I can't 3D Touch on that Camera icon to bring up its Quick Actions. Why not? Similarly, the new iOS 9 search screen displays suggested app icons, but I can't use 3D Touch on them, either.

UPGRADING THE BUMP

The fact is, our smartphones aren't vital to our lives because they take phone calls. They're vital because they connect us to the Internet, entertain us with apps, and provide us with a camera that's always with us. Both of the cameras on the iPhone 6s and iPhone 6s Plus are majorly upgraded from those on last year's models. (And yes, the rear-facing iSight camera still sticks out from the back of the case, just like on last year's models.)

The iSight camera has been upgraded to 12 megapixels, which allows the camera to capture more detail. The iPhone 6s Plus also offers optical image stabilization for both video and stills—an improvement on the iPhone 6 Plus, which only used OIS for stills.

In addition to upgrading the hardware, though, Apple has also introduced a new camera mode, called Live Photos. When you



enable Live Photos (by tapping a new Live Photos icon when in the Photo setting of the Camera app), the iPhone is always shooting video and caching it temporarily. When you take a picture, the app grabs the last 1.5 seconds of video and the following 1.5 seconds, and saves that as a movie, alongside the still picture.

The idea here is that you've sort of captured the closest thing to one of those moving photographs from Harry Potter. It's a fun idea, and once apps are updated to support the uploads, I expect that they'll be a lot of fun to share. But I admit I'm a little disappointed about how Live Photos are implemented: When you 3D Touch on a Live Photo, the beautiful 12-megapixel still fades away and is replaced by a 1440-by-1080-pixel (1.55 megapixels) video running at only 15 frames per second. I guess

even the impressive hardware on the iPhone 6s and iPhone 6s Plus isn't capable of capturing a higher resolution at a higher frame rate, but it's a disappointing drop in quality from that beautiful still image. As a bonus easter egg around a still picture, Live Photos can be fun and silly, but if I'm ever in a situation where I want to capture movement, I'm going to shoot video instead.

Speaking of shooting video, these iPhones have received a major upgrade. They can shoot 4K video (3840-by-2160, or four times the pixels of a 1080 HD video). Right now there aren't a lot of 4K TVs out there, but inevitably there will be someday. 4K video also gives you much more to work with in terms of zooming and cropping video when you edit later, because you can throw away a large chunk of an image and still have full



1080 HD resolution to work with. I imagine that all of those filmmakers who love shooting stuff with iPhones will snap up these new iPhones immediately, just because of the 4K video support.

As the parent of a teenager, I have come to appreciate that the FaceTime camera on the front of the iPhone is just as important as the one on the back. (Because selfies.) Apple has also gotten the message—the front-facing camera on the iPhone 6s and iPhone 6s plus is now 5 megapixels, up from 1.2 megapixels, and supports Live Photos and HDR mode. More importantly, Apple has built in a selfie-flash mode that uses the iPhone's display itself as a flash, driving it to up to three times normal brightness and adjusting the color of the flash to one that's

appropriate for the scene.

I'm impressed with all of these upgrades, especially on the front-facing camera. For much, much more on the iPhone 6s camera, I encourage you to read the in-depth iPhone 6s camera review (go.macworld.com/iphone6camera) by Christopher Phin.

TECH UPGRADES

With a new iPhone comes a new Apple-designed processor, of course. This time it's the A9, which for the first time integrates the motion coprocessor—this version's called the M9—into the same physical chip. The M9 offloads tasks and runs with very, very little power use—handy for things like counting how many steps you take while your phone's sleeping in your pocket. By integrating it with the larger whole, the iPhone 6s



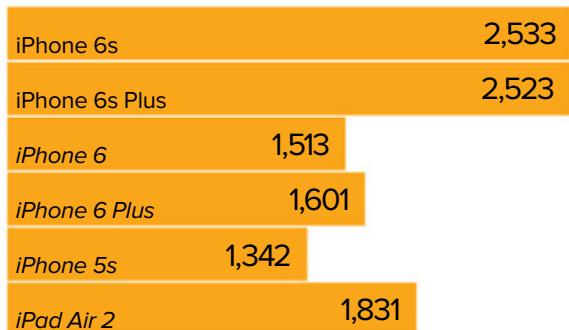
and iPhone 6s Plus can also listen for a “Hey Siri” prompt at all times, not just when they’re plugged in to power as with older models.

(If you’re afraid of your friends and family waking up your iPhone endlessly by accident, there’s good news on this front, too—iOS 9 now asks you to train Siri by saying a few standard phrases. This doesn’t necessarily lock Siri to your voice, but it reduces the chance that a voice other than yours will set it off accidentally.)

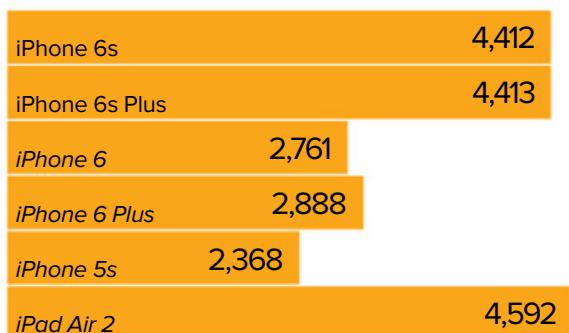
The A9 processor itself is faster than the A8 found in the iPhone 6 and 6s Plus—and by a whole lot more than you might expect. Using Primate Labs’s GeekBench 3 testing app, the iPhone 6s models appear to be roughly 60 percent faster than iPhone 6 models at single-processor tests. On GeekBench’s multi-processor test, the 6s models are between 50 and 60 percent faster. Last year’s models were only slightly faster than the iPhone 5s of the previous year—this year’s update offers a much larger boost in speed.

In addition to processor power, these new iPhones offer boosted RAM—with 2GB of memory, twice as much as in older iPhones. As I wrote in my review of the iPad Air 2 (the first iOS device with 2GB of RAM): “While the effects are subtle, they’re profound. Safari tabs just stay loaded most of the time. Apps that you used recently-ish snap open immediately

Geekbench 3 (SINGLE-CORE)



Geekbench 3 (MULTI-CORE)



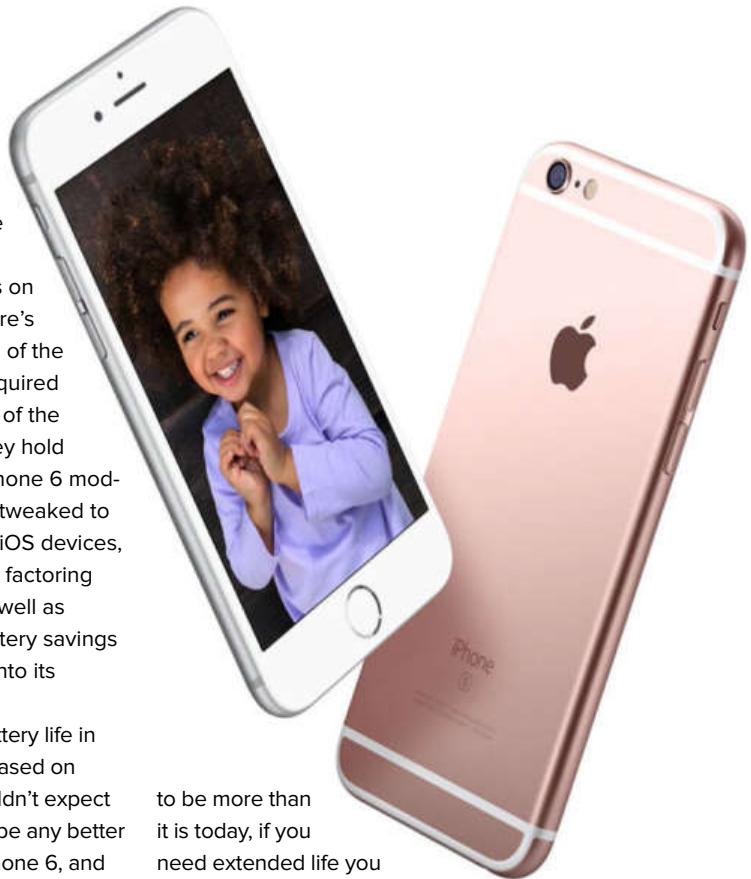
LONGER IS BETTER; GEEKBENCH 3 BY PRIMATE LABS

rather than doing a bunch of housekeeping. Switching directly between apps feels vastly better, because it’s all instantaneous. More RAM lets the entire system breathe.” Everyone who switches between apps or between pages in Safari will benefit from that increase in RAM, even if they don’t have any idea why everything seems more instantaneous than on their old

iPhones.

Apple claims that battery life on the iPhone 6s and iPhone 6s Plus is more or less the same as on previous models, but there's a catch—the introduction of the Taptic Engine actually required Apple to reduce the size of the iPhones' batteries, so they hold less capacity than the iPhone 6 models. However, iOS 9 was tweaked to extend battery life on all iOS devices, and presumably Apple is factoring those improvements (as well as possible increases in battery savings from updated internals) into its battery estimates.

I wasn't able to test battery life in time for this review, but based on Apple's statements I wouldn't expect the iPhone 6s models to be any better at battery life than the iPhone 6, and in fact I'd probably expect them to be a little bit worse than a new iPhone 6 running iOS 9. Apple continues to balance the thinness and weight of their devices with battery life, shooting for a target battery life that it feels is sufficient. Yes, you can stick a battery case on your phone if you need more battery life, or carry a little external battery with you, but my gut feeling is that iPhone battery life should be getting better, and it just isn't. Until Apple decides that the base battery life of an iPhone needs



to be more than it is today, if you need extended life you should opt for the iPhone 6s Plus—which provides a couple of hours' worth of life beyond what the iPhone 6s can manage—or invest in an external battery pack of some kind.

You probably won't see any benchmark charts about it, but Touch ID on the iPhone 6s is much faster than it was on the iPhone 5s and iPhone 6. When I put my finger on the home button, I can barely see the lock screen—in a fraction of a second, Touch ID has recognized my finger and unlocked my phone. Yes, we're talking

a very small amount of time saved, but over the course of a day those fractions can add up. I also found that the home buttons on the iPhone 6s felt and sounded noticeably more clicky than those on the iPhone 6.

SPACE CONSIDERATIONS

Finally, a word about the stock storage configuration of these phones: 16GB. These are devices that are packed with apps, are shooting 12 megapixel photos, and are capable of shooting 4K video. They are designed (by Apple in California) to devour storage space. I don't think 16GB is an appropriately large amount of space for a new iPhone in 2015.

What's worse, I think Apple realizes it, too. But rather than spring for a presumably small increase in the actual cost of the base-model iPhone 6s and iPhone 6s Plus so that they start at 32GB, Apple apparently would prefer that all but the least discriminating iPhone customers shell out an extra \$100 for the 64GB model. I'm sure this policy is doing wonders for Apple's average selling price, but the 16GB model with the price that gets 'em in the stores is a severely compromised product. This needs to change.

BOTTOM LINE

While I've got a few quibbles about



the iPhone 6s and iPhone 6s Plus—the ungenerous 16GB base configuration, a lack of improvement to battery life, a desire for Live Photos to be a bit higher in quality—these are all quibbles around the edges of a remarkable upgrade. Apple has mastered the smartphone game. Every year it seems like there's just not much more Apple can do to improve upon the previous year's iPhone, and every year Apple manages to one-up itself.

The iPhone 6s, with its upgraded cameras and processors, expanded RAM, and the delightful marvel that is Touch 3D, is the best iPhone ever. What's more remarkable is not that this year's iPhone is once again the best model ever, it's the margin by which it improves on last year's model. It's a surprisingly wide one. ■

iPad mini 4:

Finally, the update that you've been waiting for

A FASTER PROCESSOR AND A BETTER SCREEN MAKE FOR A BETTER iPAD MINI.

{ By Roman Loyola }



When Apple releases new hardware like the new iPad mini 4 (apple.com/ipad-mini-4), one way to look at it is to compare the new device to the one it replaces. In this case, the replaced device is the iPad mini 3, a completely forgettable iPad. How forgettable was it? Apple decided to keep the iPad mini 2—not the iPad mini 3—as the affordable iPad option in its lineup. The only new features the iPad mini 3 had over its predecessor was Touch ID and the option to buy a gold version. That was it—the processor, display, cameras, and everything else were the same as the ones in the iPad mini 2.

16GB iPad mini 4



64GB iPad mini 4



128GB iPad mini 4



Fortunately, the iPad mini 4 has a lot more to offer for owners of older iPad models. It's a much better upgrade to the iPad mini 2. And with the holidays upon us, don't be surprised if the iPad mini 4 is on the wish lists of your family and friends, or even your own.

Looks the same, but different

At first glance iPad mini 4 looks like the iPad mini 3 (and iPad mini 2). However, the iPad mini 4 measures 8 inches tall, 0.13 inches taller than the iPad mini 3; the iPad mini 4 is also 0.05 inches thinner. The new iPad is the same width as its predecessor, but it's also 0.08 pounds lighter. If you have a case that you used with an old iPad, it may not fit perfectly on the iPad mini 4.

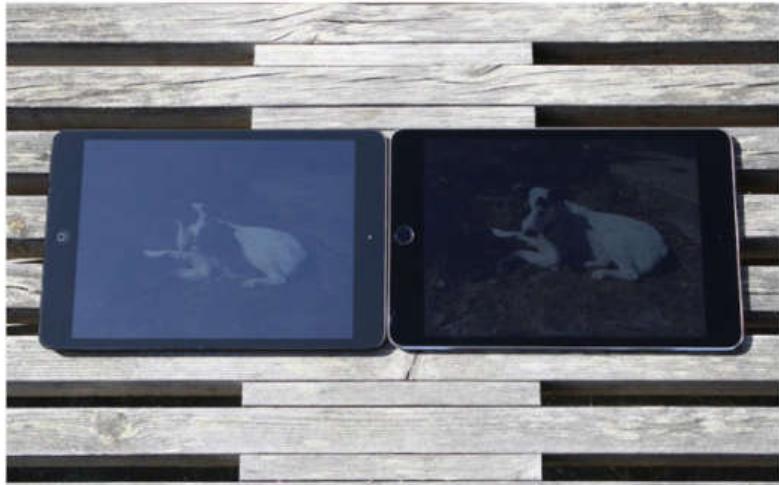
The display may also look the same as before. But upon closer inspection, the iPad mini 4 has better overall image quality. The display is still a 7.9-inch, 2048-by-

1536-pixel resolution, LED backlit display, but Apple now uses laminated displays with anti-reflective coating. The result is better color saturation that make viewing photos on the iPad mini 4 a richer experience. And it's much easier to see the display in bright light—there's still a small amount of glare, but it's so minor compared to the previous iPad mini models.

While I use my subjective evaluation to tell you the iPad mini 4 has a better-looking display, the folks at DisplayMate technologies have done lab testing to support my point of view.

DisplayMate says the iPad mini 4 matches the iPad Air 2 and the iPhone 5 and 6 in color accuracy, and that the iPad mini 4 does an even better job at cutting down screen glare than the iPad Air 2, which DisplayMate (go.macworld.com/displaymate) had previously deemed as the top performer in reflectance tests.





THE NEW SCREEN in the iPad mini 4 (right) is much more viewable in bright sunlight than the iPad mini 2 (left).

Finally, a processor upgrade

The iPad mini 3 had the same A7 processor as the iPad mini 2. The iPad mini 4 features Apple's A8 processor, which is a significant upgrade. It's not as fast as the A8X processor in the iPad Air 2 (apple.com/ipad-air-2), but there are size and heat considerations that need to be taken into account.

If you've been using an older iPad mini, the iPad mini 4 immediately feels snappier. Web pages loaded quickly, and switching between apps went without a hiccup. Overall, I didn't experience any exaggerated processor lag.

To collect numbers to form a benchmark comparison, I used Geekbench (primatelabs.com/

[geekbench](#)). The iPad mini 4 was 27 percent faster than the iPad mini 3 in both the Geekbench single-core and multi-core tests.

The iPad mini 4 ships with iOS 9, so you get all the benefits of Split View, Picture in Picture, Maps transit information, and more. We've covered iOS 9 extensively if you'd like to learn more about Apple's mobile operating system (macworld.com/tag/ios9).

Battery life

Apple touts a ten-hour battery life of mixed use that includes Wi-Fi web access and video and music playback. Of course, your mileage will vary depending on your use, but ten hours should be enough for most people.

I never had to worry about battery

life while using the new iPad mini 4 during an extended period of use—an extended period being over two hours. I tended to email, wrote, visited Web sites (some with video), chatting online, played a couple of games, and other tasks. It took a few days of using the iPad mini 4 for a couple of hours, putting it away for a while, and then later using the iPad again before I needed to charge it.

I did run a video test, where I continuously played videos on the iPad mini 4 until the battery was drained. I set the device to airplane mode, since a long flight would be the proper situation where you might watch several videos in a row. The iPad mini 4 battery lasted on average just over 11 hours, an hour longer than Apple's spec.

Geekbench has a battery test, and when I ran it on the iPad mini 4, the battery lasted on average just over 6 hours. This test is a lot more strenuous than my video test (it has an option to dim the screen, which I turned off), and I imagine it might be tougher on the battery than what most people do as work.

Better camera

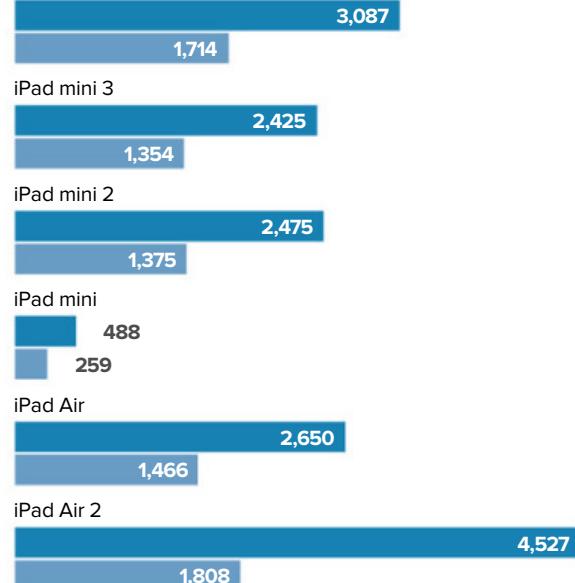
The iPad mini has long been stuck with a 5-megapixel iSight camera (that's the back-facing camera). Now, I don't usually use any kind of iPad to take pictures, but there's an old

Geekbench 3

iPad mini 4

MULTI-CORE

SINGLE-CORE



saying that goes something like, “the best camera is the one you have with you.” And sometimes, when you’re using your iPad, a photo moment appears, and, hence, the best camera you have is the iPad’s.

My point is that a better camera—regardless of how often you use the iPad as a picture-taking device—is a welcomed feature, and Apple has finally outfitted the iPad mini with a better camera. The iPad mini 4’s iSight camera matches the 8 mega-

pixel specs of the iSight camera in the iPad Air 2; along with a new burst mode, it's a nice upgrade from the 5-megapixel camera that couldn't shoot in burst mode in the previous iPad mini models. Video recording is still done at 1080p, but there's now support for slow-motion video capture.

The iPad mini 4's iSight camera captures very good detail and nice color quality. I think the iPhone 6s Plus produces much better image quality overall—Apple outfits the iPhone with a better iSight camera than the iPad because it's the camera you have with you all the time. But if you do need to shoot photos or videos using the iPad mini 4, you can rest assured that it will do an acceptable job.

The FaceTime HD camera (the front-facing camera) has only one change: burst mode support. Otherwise, it's still a 1.2-megapixel camera capable of recording 720p HD video.

Bottom line

With the holidays fast approaching, the iPad mini 4 will be a popular gift, maybe even for yourself. If you own an older iPad—especially if it's over two years old—you'll be very satisfied with the iPad mini 4 as an upgrade. It's fast,

sports a great-looking display, and it's even lighter than its predecessors. It's also available in gold if that's your type of thing.

Spend the extra money on the 64GB version, especially if you think you will take a lot of photos or videos, or play a lot of games. As an owner of a 16GB iPad 2, I hit the storage ceiling very quickly, mostly because of games. With iOS 9, Apple released app slicing, which will help owners of 16GB iPads by installing smaller apps, but I would play it safe and get more storage.

The iPad mini 2 is still in Apple's lineup and has a significantly lower price. If you're a budget-conscious buyer, the iPad mini 2 is a good deal. ■





Web design review roundup: Our favorite Mac apps for building a website

We reviewed seven apps for creating websites on a Mac.
Two apps stood out as our favorites.

BY NATHAN ALDERMAN

A

crowded slate of Mac apps aim to make building a full-featured, modern website drag-and-drop simple. Many even support one of the most crucial new web trends: responsive design, which can automatically switch up your layout to look good on a widescreen monitor, a tiny smartphone, or anything in between.

While no single program currently offers all the power, flexibility, and simplicity I'd hoped for, I did find two particularly strong contenders that at least came within shouting distance of that ideal.



TOP CHOICE FOR COMPLETE BEGINNERS: BLOCS

If you have no idea how to start building a site, start with Blocs (; blocsapp.com). At \$70, it's \$10 cheaper than most of the other programs in this roundup. And thanks to its extensive library of well-crafted chunks of code, it makes assembling an impressively slick site almost as simple as snapping together a pile of Lego blocks.

Even before you begin, Blocs has done the hard work for you, building snippets of sample code that you can mix, match, customize, and stack. Just pick a clearly color-coded section of your design—header, body, or footer—and choose a chunk of layout to add, whether it's a fancy screen-filling photo, a few columns of

text, or a swath of smaller icons or images. Once it's in place, you can tweak the template to suit your needs. At every turn, Blocs tries to sweat the small stuff so you don't have to, including a navigation menu that'll automatically update as you add new pages to your site.

Spartan but clear thumbnails help you choose which chunk to add next, and accurately represent what you're getting. While you're limited largely to that ready-made collection, Blocs offers a wide enough selection of appealing elements to build an appealing site. And since all the code's prebuilt, every site you make in Blocs has responsive design support baked in, without any extra effort on your part. The sample site I built looked great on big and small computer screens, good on my iPad, and decent enough on my iPhone 5S.

Blocs' balance between a sparse selection and effective results also applies to its feature set, including a limited but appealing roster of fonts, and its extremely basic control over text styling and padding. That

BLOCS 1.3



PRICE WHEN RATED
\$70

EVERWEB 1.8.2



PRICE WHEN RATED
\$80

MACAW 1.5



PRICE WHEN RATED
\$80

RAPIDWEAVER 6



PRICE WHEN RATED
\$80

SANDVOX 2



PRICE WHEN RATED
\$80

SPARKLE



PRICE WHEN RATED
\$80

FREEWAY EXPRESS 6

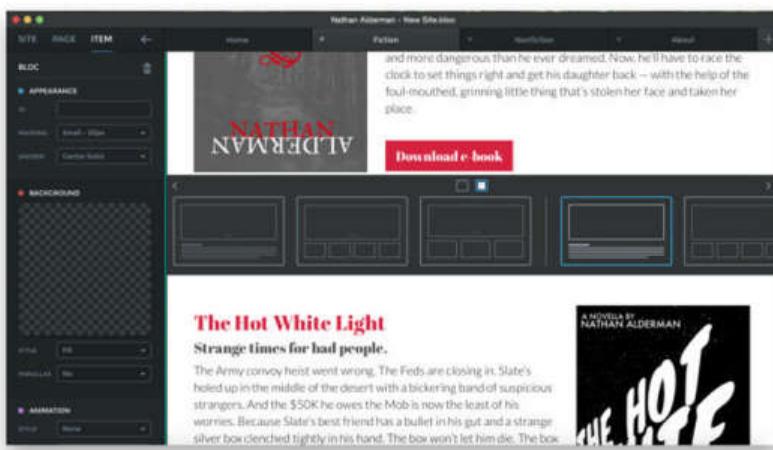


PRICE WHEN RATED
FREE

deliberate simplicity helps keep new users from getting overwhelmed, and further flattens out the already gentle learning curve.

Blocs' stark, dark design departs from Mac conventions, and some aspects take a little time to learn. Instead of bringing up contextual menus, right-clicking brings up a palette of individual page elements you can add to the existing code. Placing objects on the page can occasionally feel a tad squirrely, though it's easy to undo mistakes or move a misplaced item.

Blocs is a work in progress, and its creator's laid out an ambitious, intriguing slate of potential upgrades. For now, Blocs sets modest goals, but carries them out impressively well.



The screenshot shows the Blocs application window. On the left, there's a sidebar with tabs for SITE, PAGE, ITEM, and a dropdown menu. Under SITE, there are sections for BLOC (with a 'APPEARANCE' tab selected) and BACKGROUND. Under BLOC, there are dropdown menus for 'Add Block', 'Insert - Block', 'Content', and 'Content Block'. Under BACKGROUND, there are dropdown menus for 'Style' and 'Image'. In the center, there's a preview area titled 'Nathan Alderman - New Site (live)' showing a dark-themed website for 'NATHAN ALDERMAN' with a red logo and a 'Download e-book' button. Below the preview are five smaller thumbnail previews of different website designs. At the bottom, there's a section with the title 'The Hot White Light' and the subtitle 'Strange times for bad people.' followed by a short blurb and a small image of the book cover.

TOP CHOICE FOR EVERYONE ELSE: EVERWEB

If you know just enough HTML and CSS to get yourself in trouble, trust EverWeb (; everwebapp.com) to keep you out of it. It's more flexible and free-form than Blocs' do-it-for-me simplicity, and it's full of thoughtful tricks to help users get around the program's own limitations.

When creating a site, you can choose from an extensive slate of great-looking, up-to-date templates, or start from scratch. Like Pages, EverWeb lets you draw text and image boxes or other shapes directly onto your page, then position and style them as you wish. I liked the

BLOCS: A FEW QUICK
clicks let you drop in predesigned, customizable chunks of your new webpage.



program's clean design and well-crafted interface. It lacks a grid or guides to keep your page tidy, but EverWeb will automatically or manually align elements by their edges or centers. The layout engine sometimes had trouble accurately aligning full-width elements, but otherwise proved fun and responsive.

EverWeb offers more options for CSS styling than Blocs; it won't give you precise control over every element, but it provides enough choices to make a nice-looking site. Top-notch prebuilt widgets, including image sliders, image galleries, navigation menus, and more, are easy to edit and customize, and they yield great results. I was particularly impressed with the PayPal widget, which lets you build a full-featured online store with minimal time and effort—an ability most rivals either don't offer or charge extra for.

I WAS PARTICULARLY IMPRESSED WITH THE PAYPAL WIDGET, WHICH LETS YOU BUILD A FULL-FEATURED ONLINE STORE WITH MINIMAL TIME AND EFFORT—AN ABILITY MOST RIVALS EITHER DON'T OFFER OR CHARGE EXTRA FOR.

Rather than supporting responsive design, EverWeb provides mobile versions of many templates, and builds in an easy way to redirect mobile users to those pages from their desktop counterparts. That solution gobbles extra server space and bandwidth, but can also be less hassle than trying to reconfigure the same design to fit different-sized screens. Other clever workarounds let you expand EverWeb's font roster with your own picks, a feature found in too few of its competitors.

WHILE IT DOESN'T offer precise CSS styling, EverWeb's options are still good enough to make a slick, modern-looking site.

The code EverWeb produced was somewhat messy in the version I tested, though by the time you read this, an update promising sleeker results may be available. Still, I enjoyed EverWeb's terrific balance between friendly design and a robust feature set.

TOP CONTENDERS

MACAW



Macaw (4½; macaw.co) talks a big game but doesn't entirely deliver.

Aimed at high-end pros, it offers more power and flexibility than any other program here. However, it's also the most intimidating and frustrating app of the bunch, in part because it feels only half-finished.

Macaw excels at its finer points. You can tweak nearly every CSS style attribute via well-designed palettes, and build custom style classes to apply to any element on your page. Smart scripting support lets you drag in existing variables and color swatches as you write your code. And only Macaw offers pixel-precise control over responsive design, letting you set breakpoints at multiple screen widths, then rearrange your design to best fit each one.

But while it gets the little things right, Macaw seems to struggle with the big ones. I found layout exasperating, as if

the program were always fighting me. The help files are sometimes confusing and often incomplete—bad news for a program as dense as this one. You can only add to its limited list of fonts by paying for a subscription to Adobe Typekit. And rather than focusing on fixing these gaps in the existing version, Macaw's creators seem instead to be working on its new sibling, Macaw Scarlet, which promises even more sophisticated features.

RAPIDWEAVER



If you just want to pour your content into a limited set of sharp-looking templates, with responsive design already built in, RapidWeaver (4½; realmacsoftware.com/rapidweaver) will work great. This powerfully extensible program can do far more than that, too—but you'll have to pay a good deal extra to unlock its full potential.

RapidWeaver's by far the best choice here for building a blog or a podcast, with excellent, easy support for adding new entries and episodes. But I didn't like how it forced me to flip back and forth between the raw content on my pages and a full preview of how they'd look online.

If you want to branch out beyond its small slate of templates, keep your wallet handy. The app's online market of powerful plug-ins offers tons of new

capabilities and professionally designed themes. But their considerable cost could quickly add up to more than you paid for RapidWeaver itself.

THE REST OF THE PACK

SANDVOX



Sandvox (4 stars; sandvox.com) loses points for its limited customization and big but outdated selection of designs. However, it's delightfully easy to use, including a super-simple integrated hosting service that seems fairly priced for what it offers. And changing the whole look of your site is as easy as choosing a new template. I think Sandvox would make a great choice for teachers and students, or for parents who want to help their kids build a fun, basic site.

SPARKLE



Sparkle (4 stars; sparkle.cx) is a perfectly respectable app that unfortunately gets outshined by EverWeb, which feels like Sparkle's very similar-looking but ultimately superior cousin. I give Sparkle kudos for at least trying to make it easy to add third-party web fonts, even if the execution's a little clunky. Its preset page sizes for responsive design also work better in concept than reality. Sparkle could become a real gem, but it needs more polish first.

FREEWAY EXPRESS

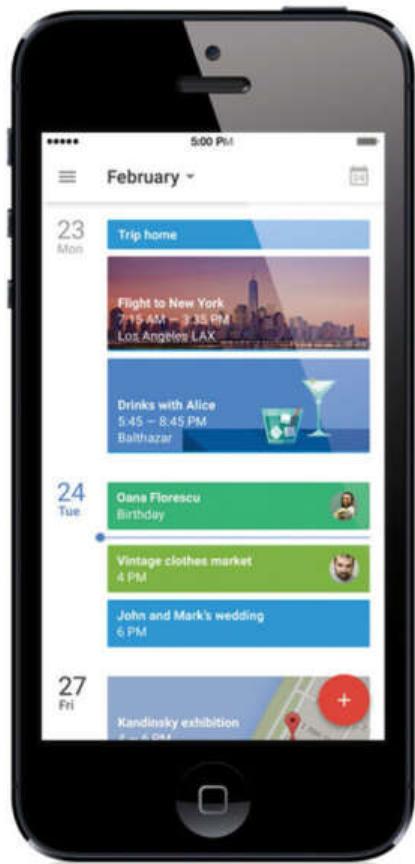


Living up to its name, Freeway Express (3 stars; softpress.com/freeway-express) is free. And if you endure its labyrinthine help files, you can build some nifty things relatively quickly. But its cluttered interface can prove frustrating, and it renders pages with such sorely outdated techniques—years behind every other app here—that you're probably better off avoiding it. A paid pro version offers much more power and sophistication, but also costs a whopping \$150.

BOTTOM LINE

Text editors are cheap or free, as are resources to teach yourself HTML, CSS, and jQuery—all more intuitive than they sound, even for non-geniuses. But that education demands dedication, time, and persistence, especially since today's cutting-edge code quickly becomes tomorrow's cobweb-covered embarrassment.

If you'd rather opt out of that Red Queen's race, you'll at least have a few good choices, whether you pick Blocs' sleek simplicity or EverWeb's user-friendly flexibility. I suspect Mac users will have even better, more complete options for building websites in a year or two. But for now, those two are the best of the bunch. ■



The mystery of the unsharable Google Apps calendar

Figuring out an issue with a corporate Google account and calendar sharing.

BY JEFFERY BATTERSBY

Recently I had an interesting problem with sharing a Gmail calendar. The calendar belonged to a client with a corporate Google account for which he was the only authorized user. He'd recently acquired another company and wanted to create a shared calendar using email addresses that differed from his company domain.

Simple enough, right?

Well, not so much.

Normally it's easy to share a Google Calendar:

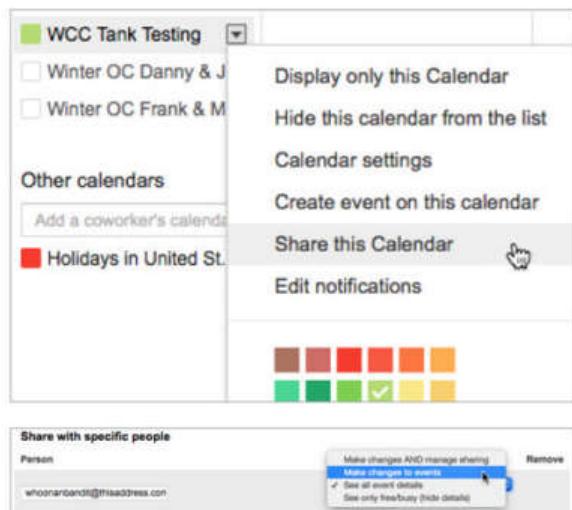
- > Hover your cursor over an existing calendar.
- > Click the little down arrow that appears.
- > From the resulting menu choose Share This Calendar.

This opens the calendar's details window with the Share This Calendar tab selected. To share a calendar with someone:

- > Locate the section that says Share With Specific People.
- > Enter an email address in the address field.
- > Choose the permissions settings for the person you're sharing with.
- > Click the Add Person button.

That's it! Except, with the Google Apps corporate calendar, that wasn't it.

No matter what permission was selected, the new user always received the most restrictive permission: See Only Free/Busy (Hide Details). Which meant that all that person sees is a spot on their calen-



dar that says the time slot is allocated. Not useful and definitely not what we wanted.

I spent a good 30 minutes trying to figure out where to change the setting. There was no way to do it. No matter what sharing setting I changed, See Only Free/Busy was the only permission the user received.

Then, in what, for me, was a flash of brilliance, I decided to have a look

NORMALLY it's easy to share a Google Calendar:

at the Google Apps Admin Console (admin.google.com), but even after digging around there for another 30 minutes or so, no luck. The only possible option seemed to be to add users to the Google Apps account, which would have cost money and which seemed unnecessary. So I resigned myself to a long call to Google Support, a feature included with Google Apps.

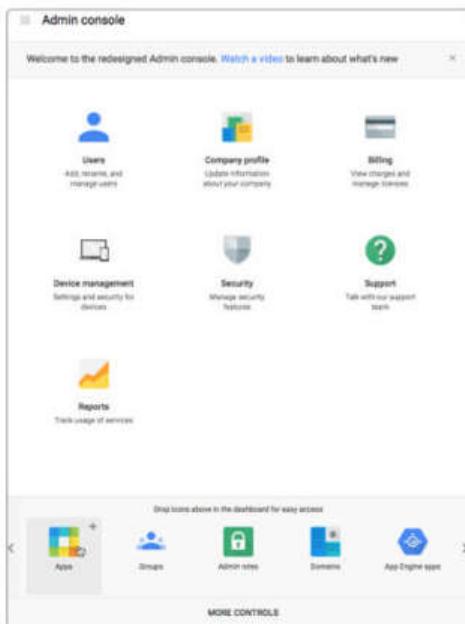
It's here that I make a confession: I was expecting the worst. Twenty minutes of hold time. A vaguely answered question. Re-routing to another queue. More waiting. Few answers.

And, at first my expectations were met. After about five minutes of wait time, my call was picked up, I explained my problem and I was told that I had somehow been routed from calendar support to billing. But...and this is a *BIG* but...rather than routing me back through another phone queue, the billing tech created a tech support ticket, asked me to hold for a couple of minutes, and handed me off to a calendar support tech.

Seriously, that may be the only time I've ever called a big company and had this happen. My hat's off to Google support, great experience!

Now, back to the fix...

As it turns out, I was headed in the right direction when looking at the Admin Console. That's where you



GOOGLE
Admin
Console

manage a Google Apps calendar's sharing settings.

To give users outside your company access to your Google Apps calendar:

- > Log in to your Google Apps Admin Console (admin.google.com).

- > Look for and click the More Controls link that appears at the bottom of the page.

- > Click the Apps button.

When the Apps Settings page opens:

- > Click Google Apps.

- > Click the text that says Calendar, *NOT* the calendar icon.

- > Click the section that says

<p>External sharing options for secondary calendars</p>	<p>Outside Hydrovac Inc - set user ability for secondary calendars</p> <p>By default, secondary calendars are not shared outside Hydrovac Inc . Select the highest level of sharing that you want to allow for your users.</p> <ul style="list-style-type: none"> <input type="radio"/> Only free/busy information (hide event details) <input type="radio"/> Share all information, but outsiders cannot change calendars <input type="radio"/> Share all information, and outsiders can change calendars <input checked="" type="radio"/> Share all information, and allow managing of calendars <p>Internal sharing options for secondary calendars</p> <p>Within Hydrovac Inc - set default</p> <p>Users will be able to change this default setting. Super Admins have 'Make changes and manage sharing' access to all calendars on the domain. Learn more</p> <ul style="list-style-type: none"> <input type="radio"/> No sharing <input type="radio"/> Only free/busy information (hide event details) <input checked="" type="radio"/> Share all information
--	--

General Settings.

> Look at the setting reading, “External sharing options for secondary calendars.”

Before you change any settings, make note of the fine print. By default, any calendars you create within Google Calendars *are not shared with addresses outside your domain.*

To finalize your sharing settings.
> Choose the level of sharing you want to make available for calendar users with addresses outside your

domain.

> The Google Apps Admin Console saves these settings as soon as you change them.

Note: When you open the sharing settings for any calendar you want to share, you will still have the option to choose the level of access you want to allow. Changing these setting only changes the number of sharing options available to you when sharing calendars. ■

LOOK AT THE SETTING
reading, “External sharing options for secondary calendars.”



Backups for the creative pro

What to think about when you need to back up vast amounts of data.

BY JOE KISSELL

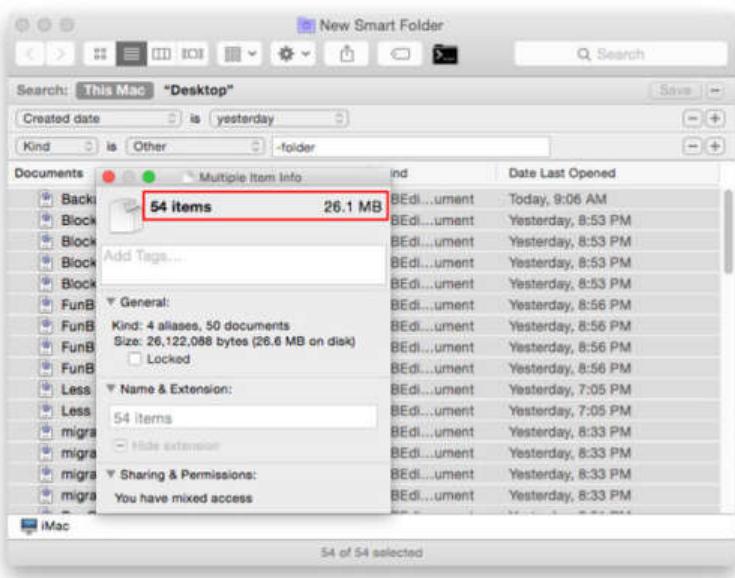
B

acking up a Mac with a terabyte or two of internal storage poses no particular challenge. [For *Macworld's* recommended backup strategies, see “Backup basics, (go.macworld.com/backupbasics)” “Bulletproof backups (go.macworld.com/bulletproofbackup),” and “How to restore data from the cloud (go.macworld.com/clouddata).”] Creative professionals, however, tend to generate massive quantities of new photo, video, or audio files on a daily basis, resulting in multiple terabytes of data that may require a more elaborate backup approach.

SPLIT DECISION

My first recommendation for creative pros is to think of your backups as two separate operations: one for your large media files (which may be on external storage anyway), and one for everything else. You can tell Time Machine to exclude a folder or volume that stores your media files by opening System Preferences → Time Machine, clicking

Options, dragging the item to the list, and clicking Save; most other backup software offers a similar capability. By doing this, you'll keep your conventional backups relatively small and fast, and make it easier to give your



media files special treatment.

Time Machine offers no way to back up a subset of your data to one destination and a different subset to another destination. So, for your media files, I recommend using a different

THIS SMART FOLDER
lists the files created yesterday; Command-Option-I shows how much space they occupy (not much in this case).

backup app. There are many fine choices (joeontech.net/extras/buym), but if I had to pick just one, I'd suggest CrashPlan because it can back up to both local and cloud storage, as well as to other computers you own. And it lets you define multiple, independent backup sets, each with its own source and destination.

RUN THE NUMBERS

Your next step is to figure out just how much data you'll need to back up, so that you can select an appropriate storage device. Again, I suggest making this a different device from the one that holds your day-to-day versioned backups (such as those created by Time Machine) or bootable clones (such as those made by Carbon Copy Cloner), because that will make the process cleaner and give you more flexibility if you later need to add storage.

Start by noting how much data your media folder(s) or volume(s) currently occupy (which you can find by selecting the folder or volume in the Finder, choosing File → Get Info, and looking at the Used line).

Now estimate how much new data you generate on a typical day. One way to do this is to create a smart folder.

In the Finder, choose File → New Smart Folder. Make sure This Mac is selected.

Click the + (plus) button on the



right, next to the Save button. From the first pop-up menu, choose Created Date; from the second, choose Yesterday (assuming yesterday was a typical day).

Click + (plus) again. Then choose Kind from the first pop-up menu in the new row and Other from the second; enter **-folder** into the field (meaning "show me just files, not folders").

Press Command-A to select everything added yesterday, and then Command-Option-I to display the total size of that data.

Click Save to save your smart folder so you can check it again later.

If you want to back up every file you have now plus all those you add over, say, the next year, take your daily average, multiply it by the number of days you normally work per year, and add the amount of space your existing media files

CRASHPLAN GIVES
you detailed control
over the retention
of deleted files and
older file versions.

occupy. Multiply the result by 1.5 (or more!) to give yourself room for additional file versions and breathing space. If that number is bewilderingly large, you can reduce the backup space required by allowing your backup software to delete older versions of your files.

For example, if you work primarily in video, you'll have your original footage, plus project files from your editing software and perhaps dozens or hundreds of intermediate versions of each video before the final cut. You should always back up the original footage—it's easier to redo an edit than to reshoot. But you might want to remove older versions of project files from your backups in order to reduce your storage needs. (For example, in CrashPlan, go to Settings → Backup and click the Configure button next to Frequency And Versions to specify how long CrashPlan should save old versions and deleted files.) Similarly, original photo files and raw audio tracks should be backed up, but you need not keep backups of every single edit to a photo or audio project; in most cases, just the few most recent ones will suffice.

Even so, you may need considerable storage space. Here are your two major options, which are the same as what you're likely using for primary storage:

It's fairly easy to find high-capacity

hard drives (8TB drive mechanisms are easy to find, and 10TB drives exist but are uncommon). If your backups can fit on a single drive, that may be all you need, although a secondary backup is always a good idea.

RAIDs and other multidrive products, such as Drobo (drobo.com) devices, let you combine two or more drives for greater capacity, performance, and/or data redundancy.

Both individual drives and multidrive devices may be packaged with local interfaces (such as Thunderbolt, Thunderbolt 2, or USB 3) or network interfaces (Ethernet or Wi-Fi); a device in the latter category is called a *NAS* (for network-attached storage). A NAS makes it easier to share storage

RAIDS AND OTHER
multidrive products, such as Drobo devices, let you combine two or more drives for greater capacity, performance, and/or data redundancy.



among multiple computers, whereas local interfaces (especially Thunderbolt) offer much faster performance.

I should mention that a RAID is not, by itself, the same thing as a backup—not even if you use RAID 1, which mirrors the same data onto two drives (or RAID 5, which requires three or more drives). A RAID can protect you against hardware failure but not accidental deletion, software bugs, theft, and other problems. So if

you use a RAID as primary storage, you should almost certainly back it up to *another* RAID.

WHAT ABOUT THE CLOUD?

Perhaps you're thinking that cloud backups—using, say, Amazon Cloud Drive or CrashPlan, which offer unlimited storage for a fixed annual fee—could be a less-expensive alternative. Maybe, but it depends on how much data you need to back up per day and whether your broadband connection can handle it. People who have or can obtain gigabit-or-faster fiber broadband are generally in good shape; most cable and DSL customers may find their service too limited to back up terabytes per month.

You can test your upload speed using a service such as Speedtest (speedtest.net). Then, to get a very rough estimate of how much data you can upload per day, take your upload speed in megabits per second (which is usually much lower than your download speed) and multiply it by 10.8. That will give you the approximate number of *gigabytes* you can upload in a day. (For example, if your upload speed is 15Mbps, you can theoretically upload $15 \times 10.8 = 162\text{GB}$ per day, although real-world results will almost invariably be worse.) If that's considerably more than the amount of new data you're creating each day—and if you aren't con-



strained by a monthly data cap—then by all means, consider cloud backups. (But I still recommend at least one local backup, because it's far faster to restore data locally than it is to download it from the cloud.)

YOU CAN TEST your upload speed using a service such as Speedtest.

FINAL THOUGHTS

Backing up large quantities of data is always going to require more money, time, and inconvenience than you'd prefer. Restoring that data may be more challenging too, in that raw photos, videos, and audio files don't always have descriptive names, yet you may have to rely on filenames when retrieving data from your backups. And backing up while on location may mean lugging around a large, clunky device. But all of this hassle pales in comparison to the agony of losing the only copy of an irreplaceable media file that a customer or client is depending on. ■

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How to breathe new life into an old Mac

Your old Mac might be a bit creaky, but there's plenty you can do to restore its youthful vigour—and much of it doesn't cost a dime.

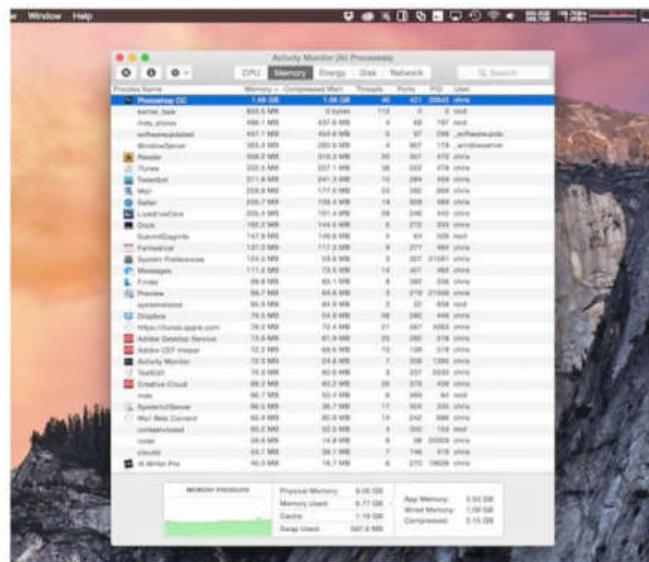
BY CHRISTOPHER PHIN

Your Mac gets a bit slow and creaky as it gets older, and we can probably all identify with that. Unlike with our stupid, weak-willed bodies, though, we don't have to accept our Macs' slowing down and eventual obsolescence as a crashing inevitability. There is a lot you can do to breathe new life into your aging computer to extend its useful life, and though some options cost money—albeit vastly less money than it would take to buy a new Mac—many are free.

This isn't about those wacky, cutesy projects to turn your iMac G3 into a fish tank or a Cube (go.macworld.com/cube) into a tissue dispenser, nor is it about celebrating the zen of using an old, slow Mac that's cut off from the Internet as a distraction-free writing tool, though there's nothing wrong with any of that. What follows is tried-and-tested *pragmatic advice* to keep your Mac happily and gainfully employed for many years to come.

UNDERSTAND ACTIVITY MONITOR

Like a doctor, you need to understand *why* your Mac is sluggish before blundering in with treatments. So your first diagnostic step is to launch Activity Monitor (/Applications/Utilities) and see where the pinch points are. This will show you what applications are demanding the most from your main processor (CPU); click the %CPU column header to sort by this, and ensure you've selected All Processes from the View menu. If you don't



recognize a process, Google it; it might be a background app that's run rogue.

ACTIVITY MONITOR

Activity Monitor will also show you pressure on your memory (RAM). If you're trying to run many, complex apps at once, your Mac might struggle. Start using your Mac as you would typically, and if the Memory Pressure graph on recent OSs isn't looking full, you don't

need more RAM; on earlier systems, if the pie chart of RAM use shows mostly green and blue, the amount of RAM you have is “cool”; if it’s mostly red and yellow, you’re in hot water, and need to add more. Again, you can sort the RAM chart by Memory to see what apps are demanding RAM; consider quitting RAM-hogs if you’re not actively using them. (And don’t ever bother with “RAM cleaning” or flushing apps; OS X takes care of that for you.)

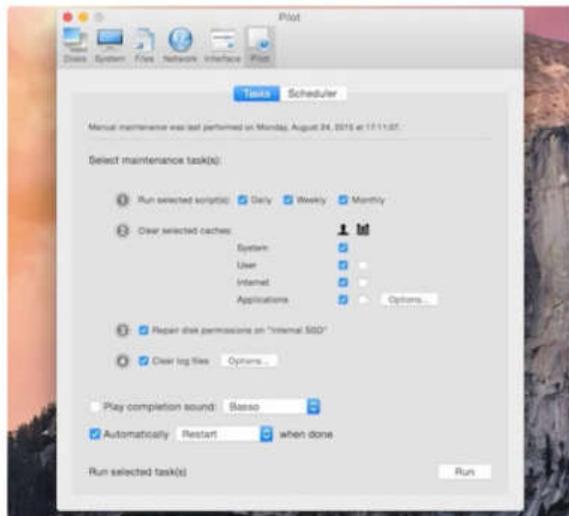
A LITTLE HOUSEKEEPING

In the early days of OS X, we regularly repaired permissions and ran apps such as Cocktail (go.macworld.com/cocktail) or OnyX (go.macworld.com/onyx) to clear caches and more to keep the system trim and tidy. These days there’s less need for that, but there’s usually no harm.

One good idea is to run Verify Disk in Disk Utilities (/Applications/Utilities) on your main startup disk every now and then to identify problems, and watch the SMART status for your boot drive in Disk Utility too; it’s monitoring for signs of imminent failure. Oh, and never be tempted to install Mackeeper (go.macworld.com/mackeeper).

DO A CLEAN INSTALL

Usually, a Mac that has slowed further and further down has just accreted apps, files and more, and one of the surest ways of restoring



the pep and vigor it had out of the box is to wipe the hard disk, install a fresh OS, and then, crucially, don’t clone everything across using Time Machine or the like. Instead, manually copy all your documents across and reinstall your apps from the App Store or CD—omitting those you don’t need.

Yes, it’s usually a colossal pain, but it’s often the most effective way to reinvigorate your Mac if you can set aside the time and accept the temporary disruption.

COCKTAIL

SWAP YOUR HARD DISK FOR AN SSD

Be sure you get the right form factor. For laptops and the Mac mini, this typically means a 2.5-inch drive—

though the MacBook Air has always used more exotic and different options throughout its life—while for desktops 3.5-inch drives are more usual; this isn't a hard-and-fast rule, though, so do check your specs carefully. Though they exist, 3.5-inch SSDs are rare, but you can convert 2.5-inch drives to 3.5-inch ones with a bracket; one might even be included with your 2.5-inch SSD, but if not, buy one separately. Other World Computing even makes one specially for the 2009–2012 Mac Pro (go.macworld.com/owcmacpro).

Check that you get one with the correct connector, too. Most often these days that will mean a SATA connector, but you can buy SSDs with the older IDE/PATA/ATA connector from, say, OWC (go.macworld.com/owc-oldssd); MacBook Airs use different connectors again. Note that with older Macs (definitely true for those with IDE, but also true for those with SATA I and SATA II connections), the connection to the motherboard itself will be a bottleneck, so don't waste your money by buying anything other than a basic SSD; you don't get the benefit of a high-performance model. Check your specs!

Any SSD, however, will have a completely revolutionary effect on a Mac that's only ever known a hard disk; it will feel much more responsive, and even if you have a small amount

of RAM—because of how low-RAM machines swap information out to the storage drive when there's too much for the RAM to hold, and since SSDs are much faster especially at this kind of data transfer than a hard disk—swapping to an SSD will also help even if you don't touch the RAM.

You *can* just clone your old hard disk to the SSD and things will still improve, but if you can bear the hassle of combining it with a clean install, you'll get such a fast machine you won't recognize it.

SSDs will also likely extend the battery life of a laptop.



ADD MORE STORAGE—AND OFFLOAD FILES

Computers perform badly when their main storage drive is full—an oft-cited rule is to leave at least 10 percent of your drive free—so consider adding more storage and offloading files you



don't need all the time to it. This might be external storage—just plug in a USB or FireWire hard disk—but don't forget about internal options. You can replace the optical drive (go.macworld.com/replaceoptical) in some laptops and Mac minis with a second internal drive, or use something like a Nifty MiniDrive (minidrive.bynifty.com) to add more flash storage to a laptop.

Many tower Macs will support at least one additional internal drive, and in this case (or also if you install a second internal drive in a laptop at the expense of your optical drive), consider using a fast SSD as your boot drive and pairing it with a high capacity, cheap hard disk. You can even link them exactly like a Fusion Drive (go.macworld.com/fusiondrive) if you're prepared to get your hands a little dirty in Terminal (go.macworld.com/diyfusiondrive).

It might not be clear what files are

taking up space on your hard disk, but apps such as DaisyDisk (daisydiskapp.com) can help you identify them, and you can then either trash them or move them to an external drive. On very tight systems, running Monolingual (go.macworld.com/monolingual) can save you a decent chunk.

If you want to uninstall apps, check (including with a web search) to see if it has a proper uninstaller first. Don't fall for "to uninstall an app on a Mac, you just have to drag it to the Trash"; search for the app's name to find support files and caches lurking in ~/Library/Application Support and elsewhere, or—with caution!—use an app such as AppCleaner (freemacsoft.net/appcleaner).

ADD MORE STORAGE
and upgrade the
RAM.

UPGRADE YOUR RAM

It's hard to give absolute guidance—it depends on what you do with your Mac; check Activity Monitor as described above—but a decent rule

of thumb is that 8GB RAM is pretty comfortable for most people (especially if you have an SSD), 4GB should be seen as a bare minimum, and anything under 4GB should definitely be upgraded if possible.

About This Mac will tell you how much RAM you have, and then it's easiest to check a memory configurator at, say, crucial.com to ensure you get the right thing. Fitting RAM is one of the easiest jobs you can do so unless you're *really* nervous, avoid paying someone to do it for you.

Add as much RAM as you can afford, basically; with the kind of older systems we're talking about, in any case adding the maximum possible is unlikely to hit your wallet hard.

REPLACE THE BATTERY IN A LAPTOP

If your MacBook, PowerBook, or iBook is only lasting minutes away from the mains, you can replace the battery. Apple no longer makes them for older machines, but there are plenty of third-party options available. It's your call but we'd be uncomfortable trusting a no-brand bargain from eBay; buy with a guarantee from a reputable dealer.

You might think you can't replace the battery if it's sealed in your MacBook, but not so. Some third-party options exist, but we'd recommend having Apple do it; follow the

links on Apple's site (apple.com/batteries/service-and-recycling) for costs and next steps; prices range from \$129 to \$199, plus taxes.

BOOST THE I/O

Use the fastest ports your old Mac has to connect peripherals—from slowest to fastest, it goes USB 1.1, FireWire 400, USB 2.0, FireWire 800, USB 3, Thunderbolt—but if the ports your Mac has are too slow for you,

REPLACE THE BATTERY
in a laptop and boost
the I/O.



you might be able to add faster ones. You can add PCI cards for faster USB and FireWire (or even eSATA or fibre) to most tower desktop Macs, and this is also true for MacBook Pros with ExpressCard/34 slots; Sonnet makes a wide range. Check compatibility carefully, though.

You can also add faster Wi-Fi to many Macs, either with a USB or PCI adapter or by connecting an external box to an Ethernet port. (Just make sure the Ethernet port isn't so old and slow it will be a bottleneck.) And remember that, say, adding 802.11ac to your Mac is pointless if you're still running an 802.11g router; replace that too.

ADD A SECOND— OR THIRD!—DISPLAY

Lots of us find ourselves more productive when we have more screen space. If your Mac can't extend its desktop to a second screen for whatever reason, or if you've already added one external display but want to add more, remember that (somewhat expensive) adaptors exist to let you connect displays to USB ports. Make sure the one you pick is Mac-compatible.

UPGRADE THE BUILT-IN WEBCAM—OR ADD ONE

Even Apple's latest webcams are pretty awful, which is especially irritating when adding a superb external one from the likes of Logi-



tech is a pretty cheap investment.

Tip: If a webcam lists compatibility with Windows Vista (yes, Vista) it will work with a Mac even for as far back as the old iChat AV app, since support for Vista presupposes support for UVC (go.macworld.com/uvc); in this case, you don't explicitly need to see Mac compatibility listed.

INSTALL THE LATEST OS

As soon as we suggest upgrading to the latest OS your Mac will support, we're inviting horror stories of old Macs completely grinding to a halt under the strain, and there's definitely a danger with older Macs that newer OSs will demand too much. But as well as the security and features benefits of the latest OS, in recent iterations not only have Apple's system requirements stayed broadly the same, but technologies such as App Nap and compressed memory in OS X 10.10 Yosemite can actually *improve* performance on weaker hardware.

If you’re worried, back up your system and verify the backup, then *try* the latest OS your hardware supports to see if there are any problems—especially compatibility problems with software you rely on—before committing; you can always restore back from your backup.

ADD NEWER OS FEATURES TO AN OLDER OS

If you don’t want to go the whole hog and update your entire OS, you can get some of the features of modern versions of OS X by adding third-party software, such as AirParrot (airsquirrels.com/airparrot), Continuity Activation Tool (go.macworld.com/activationtool), TotalFinder (total-finder.binaryage.com), Alfred (alfredapp.com), Growl (growl.info) and Filedrop (filedropme.com). It’s even possible—if sometimes a bit hairy—to install OSs on Macs Apple doesn’t officially support (go.macworld.com/oldmacs).

INSTALL A MODERN BROWSER

Much of our lives these days are lived online, and if you’re stuck with an old version of Safari or even Internet Explorer then you’ll run into frequent compatibility problems. Happily, TenFourFox (floodgap.com/software/tenfourfox) is a modern fork of Firefox created for G3, G4,



and G5 Macs. And if you’re rocking an even older system, check out Classilla (floodgap.com/software/classilla) for Mac OS 9 (and even 8.6).

USE AN OLD MAC AS A SERVER

If after all that you still think your old Mac is just too slow for day to day use, it can still lead a useful life as a server. Simply checking a box in System Preferences lets it share files—consider attaching a huge external hard disk—and if you store your iTunes Library on it you can stream that to any Mac, iOS device or Apple TV just by enabling sharing.

You could go one better and install OS X Server—a separate version of the OS prior to 10.7, but a downloadable app from the App Store in 10.7 onwards—which gives you useful options such as the ability to cache software updates locally so you’re not hammering your bandwidth, and

IF YOU DON’T WANT to go the whole hog and update your entire OS, you can get some of the features of modern versions of OS X by adding third-party software,

acting as a networked Time Machine target, like a Time Capsule.

CONTROL A MAC REMOTELY

No room? Tuck the old Mac server away in a closet and just control it remotely; no monitor, keyboard or mouse required. Enable Screen Sharing in its System Preferences, and connect to it from the sidebar of another Mac on your local network. Or if it's recent enough, enable Back to My Mac (go.macworld.com/backtomy-mac) so you can access it even when you're not on the same network.

You can go one better and buy Apple Remote Desktop (go.macworld.com/remotedesktop), which gives you extra administrative and management tools.

Alternatively, connect it to the keyboard, mouse and monitor you use with your regular Mac using a KVM (keyboard, video and mouse switch) so you can easily toggle between them.

INSTALL LINUX

Even the suggestion is heresy, we know, but one of the problems with using an old operating system these days is that if you're connected to the Internet—and who isn't?—you're more vulnerable to attacks. And since it's often impossible to update an old Mac to a new version of the Mac OS, you could look to the Linux community.



Not only will you get a more secure computer, but you'll get access to lots of modern features, too.

Now clearly it's quite a big step, and it often needs even just a little bit more tech savvy to get started than many Mac users might be comfortable with, but especially if you stick to popular, user-friendly versions ("distros") of Linux such as Ubuntu (ubuntu.com), it's definitely much less of a geekfest than most probably assume. We've happily had Ubuntu running on a Blue & White G3 (wiki.ubuntu.com/PowerPCFAQ) with aftermarket Broadcom-based Bluetooth and Wi-Fi added without having to muck about with drivers.

Follow all this advice and there's no reason why you shouldn't eke out another three, four, five years or even more out of your Mac's useful life; if only extending our own lives were as easy! ■

USE AN OLD MAC as a server.v

SURE,
AT FIRST I WAS A LITTLE TAKEN ABACK
BY THE WHOLE PEEING STANDING UP THING.
BUT I TAUGHT HIM TO THROW A STICK
AND NOW HANGING OUT WITH HIM
IS THE BEST PART OF MY DAY.

-EINSTEIN
adopted 12-09-10

A PERSON
IS THE BEST
THING TO HAPPEN
TO A SHELTER PET



theshelterpetproject.org



PLAYLIST

Everything You Need to Know About iPods,
iTunes, and Mac-Based Entertainment



Apple Music trials come to an end: Should you pay to stay?

We weigh the pros and cons of Apple Music and compare it to other streaming services.

BY CAITLIN McGARRY

A

pple Music's free three-month trial, which began when the service launched on June 30, is winding down for those who signed up on day one. Now it's time to decide whether Apple deserves your monthly payment, or if you should return to the streaming service you abandoned for the last three months with your head hung low in shame.

For some, the decision was made shortly after the trial began, when iCloud Music Library ran roughshod over carefully curated iTunes catalogs. For others, the marriage of purchased tracks with streaming ones is the ultimate music solution (go.macworld.com/applemusic10). There were some early bugs that have been mostly worked out, and three months in, it's time to decide whether to pay up or split.

So, let's break down the pros and cons of subscribing to Apple Music versus another streaming service.

HOW APPLE MUSIC STACKS UP TO ITS RIVALS

There are several music-streaming apps on the market with a variety of features at different price points. You don't get a whole lot for no money—and you'll certainly get an ad-supported service in exchange for free listening—but some services have free tiers if your monthly budget is tight. Or if you want to go big, \$19.99 per month will get you a high-fidelity audio subscription (and Prince albums) on Tidal.



APPLE MUSIC'S ADVANTAGES

Siri integration: No other music-streaming app can compete with Apple on its home turf when it comes to service integration, at least not until Apple opens Siri up to third-party applications (and there's no evidence that will happen anytime soon). And using a personal assistant to do the heavy lifting (or endless tapping) for you in Apple Music makes the app's sometimes confusing user interface, like options buried in menus behind tabs, easier to bypass. Just tell Siri what you want to do and she can help. Here's a complete list (go.macworld.com/)

Music-streaming apps compared

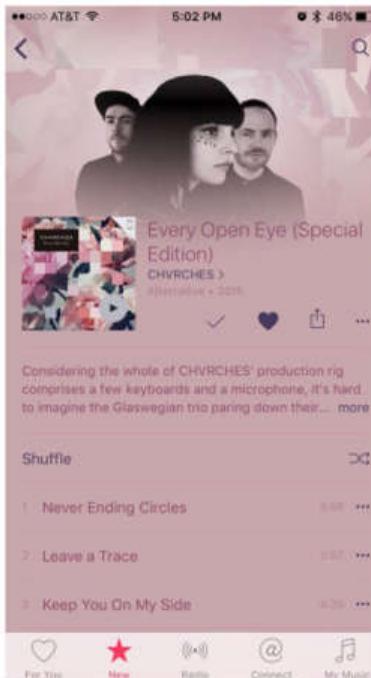
Here's a handy chart we created to show you where Apple lands in this ecosystem.

	Free tier?	Cost for premium subscription	What you get for free	Offline listening?	Family plan?	Platforms supported	Unique features
Apple Music	No	\$9.99/month	Beats 1, ad-supported radio, and Connect social features	Yes	Yes, \$14.99/month for up to 6 people	iOS, Mac, PC, with Android coming soon	Siri integration, Beats 1 radio station, combines iTunes and streaming libraries
Pandora	Yes	\$4.99/month	Create up to 100 personalized radio stations	No	No	All	Pandora One Day Pass: 24 hours of ad-free listening for 99 cents
Spotify	Yes	\$9.99/month	Shuffle play songs—that's it	Yes	Yes, 50% off each additional subscription	iOS, Android, Windows Phone, BlackBerry, Mac, PC, web, PlayStation	Running, Discover Weekly, Uber integration, original video content
Rdio	Yes	\$3.99/month for ad-free radio and 25 songs on-demand, \$9.99/month for unlimited on-demand streaming	Ad-supported radio	Yes	Yes, 50% off each additional subscription	iOS, Android, Windows Phone, Amazon Fire, Mac, web, Sonos, Roku, Chromecast, other speaker system and smart TVs	Shared playlists with friends, social recommendations
Rhapsody	No	\$4.99/month for ad-free radio, \$9.99/month for unlimited on-demand streaming	Nothing	Yes	Yes, starting at \$14.99/month for up to 5 accounts	iOS, Android, Windows Phone, Ford Sync, web player, Windows software	Personalized new music notifications, Twitter song-sharing support
Slacker Radio	Yes	\$3.99/month for ad-free radio, \$9.99 for unlimited on-demand streaming	Stream radio or create your own radio stations, skip up to 6 songs/hour	Yes	No	You name it, Slacker supports it	Big emphasis on radio, including news and sports
Google Play Music All Access	Yes	\$9.99/month	Radio, storage for up to 50,000 iTunes songs	Yes	No	iOS, Android, web	Stores up to 50,000 iTunes songs, contextual music recommendations
Amazon Prime Music	No	Available only to Amazon Prime members for \$99/year	Nothing	Yes	No	Amazon Echo and Fire devices, iOS, Android, and web	All the perks of Amazon Prime membership
Microsoft Groove Music Pass	No	\$9.99/month or \$99/year	Nothing	Yes	No	iOS, Android, Windows Phone, Xbox, PC, web player, Sonos	Sonos support, OneDrive integration
Tidal	No	\$9.99/month for standard subscription, \$19.99/month for lossless high-fidelity sound	Nothing	Yes	Yes, up to 4 additional members for up to \$30/month for standard, up to \$60/month for Hi-Fi	iOS, Android, Mac, PC, web, network players like Sonos	Lossless high-fidelity audio, Prince exclusives

[applemusic-siri](#)) of how Siri can make navigating Apple Music a breeze.

Human-curated playlists: Apple Music's precise playlists struck a chord with listeners because they're created by real people. That means instead of algorithms detecting songs that mention the word "summer" for a beachy playlist, you get curated tunes that evoke the spirit of summer. There's a playlist for every mood and activity, though Apple could make finding them a little easier.

Discovery: I don't know about anyone else, but I've discovered more new music with Apple Music in the last three months than ever before due to two features: the For You tab and the live radio station Beats 1. For You recommends albums and playlists to me based on what I've listened to and liked in the past, and it's often scary how on point those recommendations have been. I had no expectations for Beats 1, though Apple bet big on the station with three big hires from the radio world, and even if it's not always my cup of tea, I usually hear songs I would've never found on my own and end up loving them. I first heard one of my favorite songs this summer, Jack Garratt's "Weathered," on Zane Lowe's show in the station's early days. Beats 1 is something no other service offers, and it's a huge selling point (though you can also



APPLE MUSIC'S INTERFACE is slowly but surely improving, and its discovery tools are on point.

listen for free if you give up your subscription).

THE CONS

User interface needs work: Apple Music's options can be a little confusing sometimes, though the app has definitely improved in iOS 9. Little bugs like needing to add a song to My Music before being able to add it to a playlist have largely gone away, in my experience, and now you can actually tap on an artist's name when looking at an album or a song and navigate to the artist's page. These



are small tweaks, but meaningful ones that should've been in place from day one.

Apple isn't good at cloud

services: This is a refrain I've heard often since Apple Music launched, and the kerfuffle over iCloud Music Library and iTunes Match DRM (go.macworld.com/matchdrm) wreaking havoc on some users' libraries proved that Apple has some work to do. We won't even get into the history of .Mac and MobileMe, but suffice it to say that the company has a long, tumultuous relationship with the cloud. And when iCloud services go down, as they sometimes do, there goes your ability to stream music.

Lacks a free tier: If you don't have \$9.99 a month, you can't use the bulk of Apple Music's features, not even if you agree to listen to ads. Apple is bypassing the freemium model that worked well for Spotify and Rdio, likely because record labels aren't a fan of letting people listen to music for free even if ads are part of the deal. For some listeners, that's a deal-breaker. You can still listen to Beats 1 and select ad-supported radio stations, and see content that artists share via Connect, but it's not the on-demand with ads you've come to expect from other services (though that appears to be a dying model: go.macworld.com/freemium).

APPLE MUSIC IS deeply enmeshed with iTunes, and for some, that's a big problem.

PRO FOR SOME, CON FOR OTHERS

Apple Music sprang forth from iTunes, which means three things for you:

- > The app is built in at the OS-level so it has benefits no other streaming service can offer (Siri integration, for example).
- > It unites your purchased music with streaming tunes in one spot.

> If iTunes annoys the hell out of you, Apple Music will not make it better.

Some users prefer to keep their MP3s and their streaming libraries separate. Others like to live on the edge. And let's not forget an entire generation of music lovers are growing up streaming, not buying, the tunes they love, and for whom mingling two libraries doesn't matter. ■



Get to know Up Next in the Music app for iOS

Remember when you just pressed Play on your iPhone or iPad to start listening to music? Now, you have a trio of playback options: Find out what happens when you tap Play Next, Add To Up Next, and more.

BY BEN PATTERSON

Remember when you just pressed Play on your iPhone or iPad to start listening to music? Those were the days. Now, you actually have a trio of playback options to choose from when it comes to iOS's Music app: Play, Play Next, or Add To Up Next. (You can also pick Start Station to create a streaming playlist based on a song, artist or album, but that's for another day.)

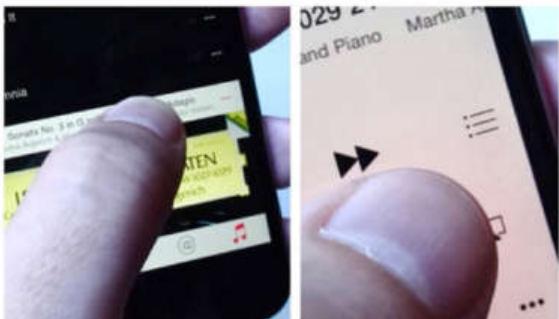
If you've been studiously ignoring Music's confusing Up Next features, I don't blame you. That said, it's worth your time to get acquainted. Up Next does a great job of letting you create an on-the-fly playlist, perfect for perusing your tunes without abruptly jumping from one song to another. Up Next also keeps track of all your recently played tunes, and best of all, Up Next will stay out of your way when you're not in the mood to use it.

Here are six ways to make the most of Up Next, starting with...

TAKE A GANDER AT YOUR UP NEXT LIST

Whether you know it or not, you've got an Up Next playlist up and running on your iPhone or iPad. To take a look, open the Music app, pick any song, album, playlist, or artist, press Play, then tap the Music mini-player (the thin strip near the bottom of the screen that displays the track name) to reveal the main playback controls.

To the right of the Back, Play, and



TO SEE YOUR Up Next list, tap or swipe up on the Music mini-player (left), then tap the button with the bulleted list icon (right).

Skip buttons, you'll see a button marked with a stack of three bulletted lines. Tap it to open your Up Next list.

At the top of the list, you'll see the song that's currently playing, while the following tracks will be the remaining songs from the same album or playlist. Scroll up, and you'll see a (probably) huge list of songs that you've played in the recent past.

If you go back to your library and press Play on another song, the remaining tracks in its album will be added to your Up Next list, replacing the tracks from the previous album.

or playlist.

That's all there is to it—and if you like, that's all there needs to be. Nothing's stopping you from closing Up Next and forgetting about it forever.

SELECT A SONG TO PLAY NEXT

Scroll up a bit on the Up Next list, find a favorite track in your playback history, tap the little three-dot button to the right, then tap Play Next.

When you do, a helpful icon will appear—one that looks like a stack of items, with an arrow pointing toward the top. What you've done, basically, is queued up the song you picked, and it'll begin playing as soon as the current track is finished.

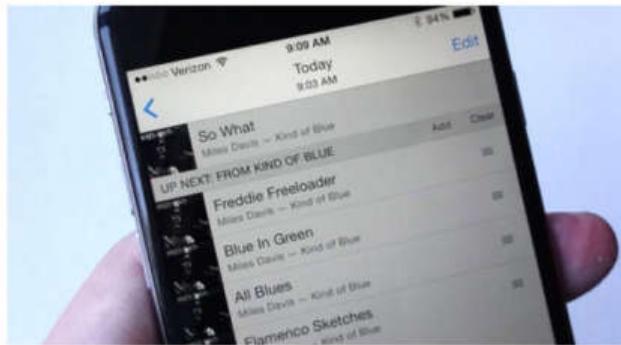
Just below the track you chose to play next, you'll see the original album you started playing, with a "Resume" heading just above the album tracks.

Bonus tip: You can select an entire album, artist or playlist to your Up Next list; just tap the three-dot menu to the right of the artist, album, or playlist name in your music library.

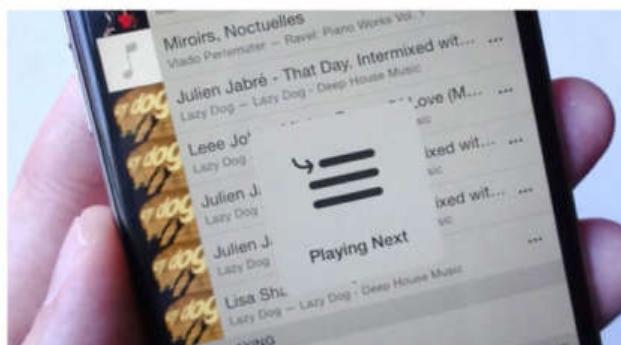
ADD A SONG TO UP NEXT

Scroll up again to your track history in Up Next, tap the three-dot button next to a song, then tap Add To Up Next.

Again, an icon will pop up, but this time the arrow will be pointing to the



AT THE TOP of your Up Next list, you'll see the song that's currently playing, while the following tracks will be the remaining songs from the same album or playlist.



ONCE YOU SELECT a song to play next, it will be queued up for playback after the track that's currently playing.

bottom of the stack rather than the top. The idea here is that instead of queuing up a song to play directly after the currently playing track, the song will play *after* the last song that's on your Up Next list.

OK, so what happened to that album we began to play before all this Up Next business? It's still there, but it's been pushed below the pair

of tracks you just manually added to your Up Next list. You'll see the remaining album tracks under the Resume heading.

PRESS PLAY ON A NEW SONG IN YOUR LIBRARY

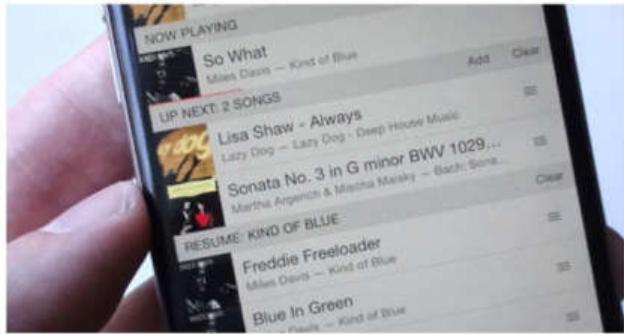
So, you've got a couple of songs queued up and ready to play in your Up Next list. What happens if you head back to your music collection and press the Play button on a random song?

If you do, a pop-up asking "After playing this, do you want to play the song you've added to Up Next?" will appear. Tap the Keep Up Next button, and the songs you previously added to your Up Next queue will scoot just below the track you just started to play. Tap Clear Up Next, and those old Up Next songs will disappear.

Keep in mind that if you haven't manually added any songs to your Up Next list, you won't be bothered by the "After playing this..." pop-up, no matter how many times you jump around and press Play on various songs.

REARRANGE YOUR UP NEXT TRACKS

Head back to your Up Next list (swipe up on the Music mini-player to reveal the main playback controls, then tap the button with the three



TAP THE ADD To Up Next option to add a track to the bottom of your manually selected Up Next songs; notice the tracks of the album that was originally played, under the Resume heading.



IF YOU PRESS Play on a song after queuing up other tracks, you'll be asked whether you want to keep your Up Next songs or clear them out.

bulleted lines), then check out the little virtual "handles" to the right of each queued-up song.

If you tap and hold one, you can slide the track up or down the list, rearranging your Up Next tracks. It's a nifty trick, but unfortunately there's no way to grab and slide an entire batch of songs at once; you can only

drag them one at a time.

GET RID OF YOUR UP NEXT TRACKS

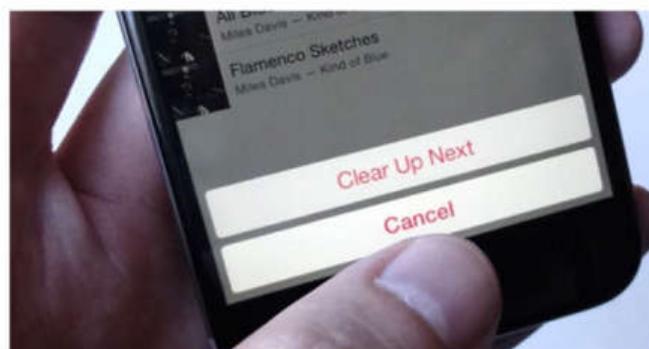
Say you've had enough of Up Next and you're ready to go back to playing songs the old-fashioned way. If that's the case, there are a couple of ways to wipe your Up Next list and start fresh.

One is to simply press Play on a new song; as we already covered, a pop-up will appear with an option to clear your Up Next list. You can also go straight to your Up Next playlist and tap the Clear button next to the Up Next heading.

If you'd like to nix a specific song from your Up Next list, use your thumb to nudge it to the left to reveal a Remove button. Tapping that just removes it from the Up Next queue, not your music collection. ■



JUST TAP AND slide a handle to the right of a track to rearrange it in your Up Next list.



WANT TO GO back to the old-fashioned way of playing tunes? If so, you can clear out your Up Next list in just a few taps.



*"I want
to be
a bench.
Recycle me!"*



IWantToBeRecycled.org



KEEP AMERICA
BEAUTIFUL



Ask the iTunes Guy

Reader questions about managing iTunes libraries, and the case of the haywire music volume.

BY KIRK McELHEARN

Q&A

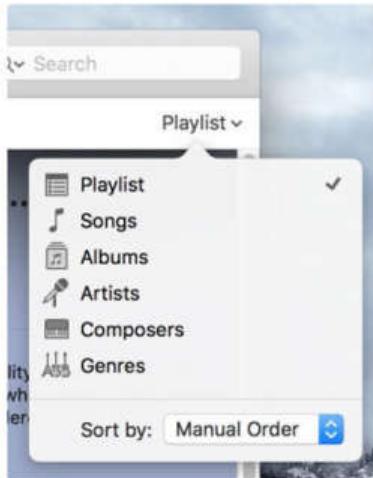
You'll probably have updated your iPhone or iPad to iOS 9 by now, and I expect to have a flurry of questions about using iTunes and the iOS Music app with the new operating system. In the meantime, I explore three questions related to managing iTunes libraries and content in this month's column. And I end the column with an intriguing question about unexpected volume changes on an iPhone, whose resolution was surprising.

PLAYLIST VIEW

Q: In iTunes 12, some of my playlists look different from what I'm used to. Instead of a series of columns with headers, I only see song, artist, and album names, the genre, and the duration of tracks. How can I get the old playlist format back? I want to be able to see all of my playlists as they were previously, and not in the newer format.

A: As you say, this is a new view added in iTunes 12. I discussed the various views in a recent article. In your case, you want to choose Songs view, rather than Playlist view.

Unfortunately, iTunes doesn't let you set this as a default for new playlists; when you create a new playlist now, it defaults to Playlist view. You'll have to change the views manually for every playlist you create.



CLICK THE POP-OVER at the top right of the iTunes window to choose how your playlist displays.

RIPPING CDS WITHOUT iTUNES

Q: Is there any way that I can rip a CD to a destination folder other than the Music folder in my iTunes media library? Is there any way that I can keep iTunes from automatically adding the ripped tracks to my iTunes library? I don't allow iTunes to organize my music library, I don't store my ripped or downloaded music in my iTunes media library, and I don't automatically add all of my music to my iTunes library. It's cumbersome to rip a CD and then have to manually move the files to their proper home and then delete them from iTunes.

A: I can offer two possible solutions. The first is to rip your CDs with a different app. I wrote an article about ripping CDs without iTunes a few years ago; I strongly recommend the free XLD on OS X.

However, if you use an app other than iTunes, you don't have access to the Gracenote database for metadata, or to downloaded album artwork from the iTunes Store. So what you could do is rip the CDs in iTunes, then, select one of the tracks and press Command-Shift-R, or right-click and choose Show In Finder, to display it in the Finder. Press Command-Up Arrow to move up to the folder containing the album.

You can copy this to a different location, and then go back to iTunes and delete the files. This is cumbersome, as you say, but if you like the advantages of ripping in iTunes, it might be the best solution.

SHELVING AUDIOBOOKS

Q: I have over 300 audiobooks in iTunes. Is there a way to move them to storage on my iMac and out of iTunes and still be able to return them to iTunes later?

A: Sure, that's what I do. You could do this in two ways. You could go to the Audiobooks folder, which is in your iTunes Media folder. Copy the books you want to move, then delete

them from your iTunes library. If you want to remove all your books, then just copy the entire Audiobooks folder; if you only want to copy some, then select the ones you want to copy.

The other option is to create a folder in the Finder, anywhere on your Mac, and open that folder. Go to your Audiobooks library in iTunes, and select all the books you want to move. Drag them to the open Finder folder; the Finder copies them. Delete them from your iTunes library.

If you want to add any of them to your iTunes library later, just drag them to the iTunes window.

One important point. If you've bought these audiobooks from the iTunes Store, then make sure you have backups, since Apple doesn't let you re-download them. If you've bought them from Audible, however, you can always re-download them from the Audible website. So you might not even need to save them outside your iTunes library if that's the case.

WHY IS MY MUSIC VOLUME GOING HAYWIRE?

Q: After playing a few songs at normal volume on my iPhone 5c, my music randomly drops to half volume. If I let it play for a few seconds, then skip back to the

start of the song, the volume usually returns to the correct level, but if I skip ahead, it drops again. Any ideas?

A: I get lots of stumpers, and this one had me scratching my head. I corresponded with the reader who sent in the question, trying to figure out if it was a problem with his iPhone's headphone jack or something else.

He eventually figured out that it had something to do with the Facebook app running in the background. When he quit the Facebook app, the volume stayed at the correct volume.

Truth is sometimes stranger than fiction.

Have questions of your own for the iTunes Guy (itunesguy@mac-world.com)? Send them along for his consideration. ■

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN

Find out which iOS app is requesting your Apple ID password

Q: I was traveling overseas a couple of years ago for a friend's wedding. While there, I spent an afternoon with a long-lost acquaintance. Somehow, for whatever reason, he shared an iOS app with me, installing it on my phone and using his Apple ID. Up until I bought a new phone and restored it from backup, everything was fine. Now, however, the phone is asking me for his Apple ID credentials.



I don't even remember which app it was he installed for me. Is there any way to easily find which app is causing the problem without uninstalling every app on the phone and re-installing them until I find what I am looking for?

—David Nicklin

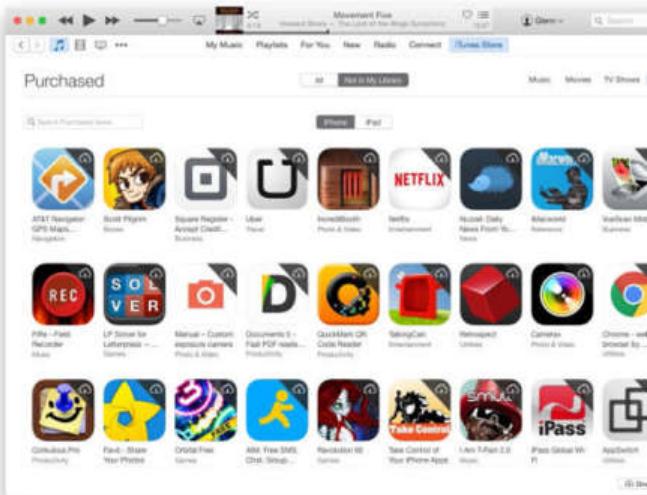
A: You are so not going to like the answer to this. I encountered this a few years ago, when I installed some apps on my wife's phone before Apple added Family Sharing—which we still don't use, but at least it's an option.

After she updated, she had the same problem: she needed my password, which wasn't cached, to perform updates on the apps I'd installed and there was no way to know which. Fortunately, we remembered the apps and removed them.

I scoured the Internet, as I imagine you may have done as well, and there's no magic bullet. As long as you upgrade or restore from a backup, the app will persist in reinstalling.

Now, you can get a list of all purchased apps from the iTunes Store via OS X. Launch iTunes → Select the iTunes Store → Click the Purchased link at upper right → Click the Apps link at far right, and then the All button and the iPhone button.

Scrolling through the list when organized by Most Recent, you may be able to go back through time to



find the app in question, as it may stand out in context. (Selecting Name doesn't seem to actually sort apps alphabetically.)

With the iPhone plugged into a Mac, you can select it in iTunes, and then view the apps installed on it. It's tedious, but if you can find the mismatch, you can uninstall it from the iPhone, and finally be free.

iTUNES HAS A STRANGE
idea of alphabetic
order when you sort
your purchased apps
by the Name option.

How to hide purchased books from iBooks

Q: I have Apple's manuals for iPhones, iPads, and iPods for iOS 6, 7, and 8. At this point I only want the iOS 8 manuals, but while I can delete the book files from my devices, they are still listed on my bookshelf as downloadable from

the cloud. What makes this particular maddening is the titles for many of the aforementioned books are too long to view in iBooks, so the only way to find the iOS 8 version for iPhone is to download and open each iPhone manual until I find the right one.

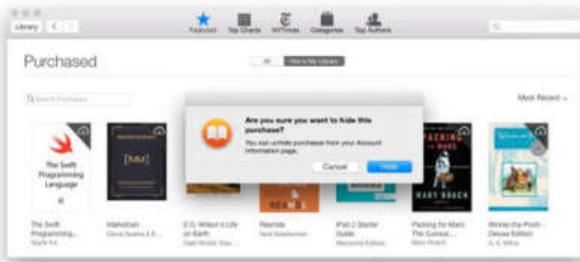
—Tony Leneis

A: The bad news: Once you obtain a book from Apple, it's forever in your iCloud account. It will follow you to the end of time, like a cloudy spectre of words.

The good news: While it remains in your account, you don't have to see it! And you've got two ways to work around it.

While you can't delete purchases, you can hide them, although you have to use iBooks for OS X to do so.

1. Launch iBooks.
 2. Click the iBooks Store button,
and log in if prompted.



3. Click the Purchased link on the main store page (at middle right).
 4. Hover over a purchased book and click the X in its upper left.
 5. You're prompted to confirm hiding the book. Click OK.
It can be unhidden via Account information as noted.

YOU CAN HIDE your purchases so they don't appear in iBooks, but only in OS X.

You can also organize books to keep them available but out of the way. In iBooks for OS X, use the List view, which lets you resize columns, and see the full name of lengthily titled books to identify them more easily. Make sure syncing is enabled

between iBooks in OS X and iOS. You should be prompted to turn sync on when logged into an iCloud account when launching iBooks in OS X.

If you don't have iBooks installed in OS X,

	All Books	Collections	Authors	Categories	List	By Author
Books						
Down and Out in the Magic Kingdom	Gary Shteyngart	Fiction - Literature	Books	Last Read		
1925: History's Life or Death	Sam Weller, Edward G.	Nonfiction	Books			
Desmond's Rule	Gary Kinsman	Fiction & Literature	Books			
Pred & Stereotype	Marcus E. Zillman	Computers	Books			
Workers	David Squires & Esther R.	Business & Economics	Books			
Hacking for Dummies: The Complete Reference of Life in the Kode	Wally Javitz	Physics	Books			
The Adventures of Sherman Holmes	Mark H. Green	Fiction & Literature	Books			
The Big Thing Book (1971)	Arthur Conan Doyle	Fiction & Literature	Books			
The Magazine #6	Unknown Author	The Magazine	Books	8/13/2014		
The Magazine #7	Unknown Author	The Magazine	Books	8/13/2014		
The Magazine: The Complete Anthology	Unknown Author	The Magazine	Books	1/20/2014		
The Magazine: The Book, October 2012 to October 2013	The Magazine	The Magazine	Books	5/24/2014		
The Magazine: The Complete Anthology	David Peacock	The Magazine	Books	5/16/2014		
The Magazine: The Complete Anthology	David Peacock	The Magazine	Books	5/14/2014		
We Learn Programming Language	Apple Inc.	Programming	Books			
We Love to Program	Elmwood Johnson	Science Fiction	Books			
We Must Be Dreamers	J. A. White	Science	Books			

THE iBOOKS LIST VIEW in OS X lets you extend the book's title field to see lengthy names.



CREATING A COLLECTION

is an easy way to make sure you can quickly find what you want to read or download from iCloud.

use the landscape view on an iPhone or iPad in iBooks, as it will use the full width of the screen to show the title.

Now create collections corresponding to your needs. In your case, you might want *iOS 8* as one collection and *Outdated manuals* as another. Now you can move titles into those collections.

In OS X in the List view, right-click a title and then select Add To Collection. You can also select multiple books and choose New Collection From Selection if you'd prefer to go that route. If you want to organize visually, click the Collections button then select the All collection link at left. Now you can drag books into collection names below All and they're added to those categories.

In iOS, it's a little more confined, so follow these steps:

1. In any view, click Select.

2. Tap the circle next to any book you want to put into a collection.
3. Tap Move at upper left.
4. In the Collections list, choose the category you want or swipe to the bottom to choose New Collection.

You can also suppress the display of books stored in the cloud and not present locally. In OS X, chose View → Hide iCloud Books. In iOS, tap the Collections selection at the top of iBooks, then tap the Hide iCloud Books' switch to on (green).

Stop Photos from launching when you plug your iPhone into your Mac

Mike Kahn converted one iPhotos library to Photos in OS X. Now, every time he plugs in his iPhone, Photos launches, requiring him to quit and then launch iPhoto. He'd like to

revert to iPhoto being the default choice.

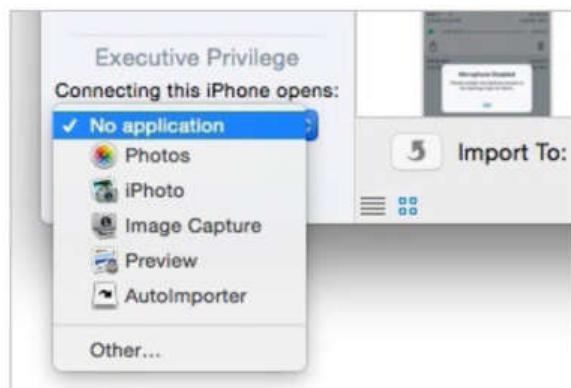
Apple likes to hide its browser, mail, and iOS-attached launch preferences in funny places. You set your default browser in Safari, meaning you have to launch Safari to stop launching Safari in the future (Safari → Preferences → General → Set Default Browser); same with Mail and email (Mail → Preferences → General → Default Email Reader).

Where do you find the photo-app launching preference? Not in Photos or iPhoto, as you'd expect! Instead,

Ask Mac 911

We're always looking for problems to solve! Email us at mac911@macworld.com, tweet them at me (if brief) @glennf, or call 206-337-5833 and leave a voicemail message. (We'll be experimenting with some audio in the future, and may put your question "on the air.")

Mac 911 can't provide direct email responses or answers for every question. For that, turn to Apple-Care, an Apple Store Genius Bar, or the Apple Support Communities.



launch Applications → Image Capture, a very useful utility that can work with iOS devices, inserted SD cards, attached cameras, and networked scanners.

IMAGE CAPTURE LETS
you pick an app (or no app) to open when a device is attached to your Mac.

1. Attach your iOS device.
2. Select it in the left navigation bar in Image Capture.
3. At the lower left, you'll see your device's name, the message "Connecting This *description* Opens," and a pop-up menu. (If that doesn't appear, make sure the tiny panel button at the extreme lower left has an arrow pointing up, not down.)
4. Choose your desired app or No Application.

For Mike, it should read Photos, and can be changed to iPhoto. ■